15

NO. 158

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The PHOTOFACT Servicer

January 15, 1952 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 16 157 & 158

"There is nothing so dead as a neglected opportunity." - Anon

TRADE NEWS

Award

We are sure that you will be as pleased as we were to learn that the International Resistance Corp. has been chosen for an outstanding award. Each year the Philadelphia Chamber of Commerce selects a local organization whose employer - employee relations have been excellent. I. R. C. was selected for the year 1951 and we extend to them our congratulations.

* * *

Output Transformer Chart

Now available from Standard Transformer Corporation, Chicago, is the new Stancor Output Transformer Chart (Stancor 375) which lists 129 of the most frequently used output transformers and the tubes with which they should be used.

This handy Stancor guide simplifies the selection of the proper transformer for use as replacement in radio receivers or in the construction of audio amplifiers. In almost all cases more than one transformer is listed so that there is a choice of mounting types, and the application, class and operating characteristics of the tube and transformer are shown in ready reference form.

The chart lists tubes, use, class, watts, load resistance in ohms and the correct Stancor output transformer to be used with each tube.

* * *

New Catalog

Clarostat Mfg. Co., Inc., Dover, N. H. has just released Catalog No. 51 listing their complete control and resistor line. Be sure to get your copy from your Clarostat distributor.

* * *

New Catalog

Merit Coil and Transformer Corp., Chicago, Ill. has issued Catalog No. 5211 which contains listing on their complete coil replacement line in addition to their transformer line. Their new catalogs are now available at your Merit distributor.

* * *

CARE OF PICTURE TUBES

A Hytron Radio & Electronics Company News Release covers the problem which has developed as a result of using certain anode caps on TV picture tubes. Because of its interest we reproduce it here.

"During the past year, a field problem has developed as a result of using certain low-grade rubber anode caps on picture tubes. Under the relatively high electrostatic stress present at the anode button, these caps gradually become conductive, due to a chemical decomposition of the rubber. This leads to a reduction in the leakage path across the insulated area of the glass around the anode button and often results in corona or arcing problems. Ordinary wiping or cleaning of the glass under the rubber cap does not remove the surface contamination that results from the breaking down of the rubber. This has lead some service men to believe that the picture tube itself was defective and they have consequently replaced the tube, only to find that in a few weeks the new tube was in exactly the same conditions.

"The suggested cure for this situation is to remove the rubber cap and replace it with a new one of plastic or synthetic rubber, not containing lamp black (carbon) as a vulcanizing agent. If such a cap is not available, the complete elimination of the cap will, in no way, harm the set or the picture tube. Some manufacturers are already leaving the cap off on new production since it is no longer required by Underwriters Laboratories.

"The cleaning of the picture tube can be accomplished quite easily if ordinary water and a scouring compound are used with a little bit of "elbow grease". The area around the anode button should be so cleaned and then thoroughly dried and polished with a clean, dry cloth so that no residue remains.

"If the above instructions are carried out, no further trouble should be experienced."

* * *

FIELD EXPERIENCES

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set, or 200 Door Knob Hangers as described previously in the Servicer. Since it is impossible to verify the accuracy of contributions we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

ADMIRAL Model 17K22 - Chassis 21F1
Photofact Set No. 135, Folder No. 2

Symptom: No vertical deflection.

Cause: R-71 resistor completely open, caused by a partial short in 6SN7 (V-12).

Remedy: Replace with a good 820 ohm resistor, and be sure a good 6SN7 is used. R-71 sometimes increases in value, causing insufficient vertical deflection, or poor vertical linearity.

Horace D. Westbrooks
415 W. Slaton Ave,,
Griffin, Ga.

* * *

SYLVANIA Models 4120M, 4130M, E, W,
6110X, 6120B, M, W, 6130B, M, W,
7110X, 7120B, M, W, 7130B, M, W
Photofact Set No. 124, Folder No. 10

Complaint: Picture jumps and rolls vertically.

Analysis & Repair: Defective .047 mfd. capacitor (Item C59), at grid of 12AX7 (V14) sync separator sections. Replace capacitor with one of the units listed and set works okay.

Irving Rothstein
Rothstein & Smith
Radio-TV Sales & Service
33 N. Main St., Liberty, N. Y.

* * *

RCA Model 17T-160

Complaint: Sound and raster okay. No picture.

Cause: Open crystal detector diode 1N60 in the fifth picture IF transformer.

Remedy: Replace the 1N60. Replacement is easy since the crystal is located on top of the transformer beneath a small cover. The chassis doesn't have to be removed from the cabinet.

SILVERTONE Model 116
Photofact Set No. 139, Folder No. 13

Complaint: Inusfficient vertical height and foldover at the bottom of the raster.

Cause: Item R73 had changed value.

Remedy: Replace with 1 watt resistor of the correct value.

Editor's Note: Both above Experiences were contributed by:

F. Loewy
Ace Radio-Television Service
19 South Third Street
Phoenix, Arizona

* * *

PHILCO Model 50T1406
Photofact Set No. 115, Folder No. 8

Complaint: Picture very dim and takes from 10 to 15 minutes to come on.

Cause: Improper adjustment of horizontal sweep circuit.

Remedy: Adjust as instructed on page 18 of the Photofact Folder.

Edward L. Davis, Sr.
Eddie Davis Radio Service
211 W. Market Street
New Albany, Ind.

* * *

OLYMPIC Models 752, 753, 755,
764, 766, 767, 773,
Photofact Set No. 126, Folder No. 8

Complaint: Picture negative - more like shadows, no control over contrast.

Analysis: Shorted V-12 (12AU7).

Repair: Do not replace this tube without first checking C-32 (.05 mfd.). This capacitor will nearly always be shorted when this condition exists. Replace both capacitor and tube.

On the same receiver -

Complaint: Picture will not sync horizontally.

Analysis and Repair: First indication shown shorted elements in V-11 (6AL5). Cause of trouble is usually a shorted capacitor item C-38. Replace with one of the recommended units.

Editor's Note: Both above Field Experiences were submitted by:

William P. De Rita
Bill's Radio & TV
16 Pumgansett St.,
Providence, R. I.

* * *

BENDIX Model 6100
Photofact Set No. 111, Folder No. 3

Complaint: Insufficient Pix Height.

Cause: Defective vertical output transformer (Item T 3). Primary resistance measured 5200 ohm, should be 660 ohm.

Remedy: Replace with one of the listed units.

CAPEHART Model 332B
Photofact Set No. 112, Folder No. 3

Complaint: Dark picture on channel 2, weak picture on channels 11 & 13.

Cause: Open filament (Pins 5 & 9) in V14 (12AU7) AGC & sync amplifier. This caused loss of AGC section operation.

Remedy: Replace with recommended unit.

Editor's Note: Both above Field Experiences were submitted by:

Jack Smith
The Radio Shack
1602 W. Pratt St.,
Baltimore 23, Maryland

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 6 IN SET 141

General Electric Models 17C103, 17C104, 17C105 17C107, 17C108, 17C109, 17C112, 17C114, 17T1, 17T2 17T3, 17T4, 17T5, 17T6.

General Electric Models 17T4, 17T5, 17T6, 17C112 and 17C114 are identical to the group of Models covered in Photofact Folder 6 in Set 141 with the following exceptions:

The brightness and focus control was changed to Part Number RRC-168.

The horizontal and vertical hold control was changed to Part Number RRC-169.

The contrast-volume control and on-off switch was changed to Part Number RRC-170 for Models 17T4, 17T5 and 17T6.

The contrast-volume control and on-off switch was changed to Part Number RRC-171 for Models 17C112 and 17C114.

The focus coil was changed to Part Number RLF-050.

The audio output transformer was changed to Part Number RT0-081 for Models 17T4, 17T5 and 17T6.

The audio output transformer was changed to Part Number RT0-082 for Models 17C112 and 17C114.

The tuner was changed to Part Number RJX-045.

Models 17T4, 17T5 and 17T6 uses a 5 1/4" speaker Part Number S-5250-7.

Models 17C112 and 17C114 uses a 12" speaker Part Number S-1212 D-7.

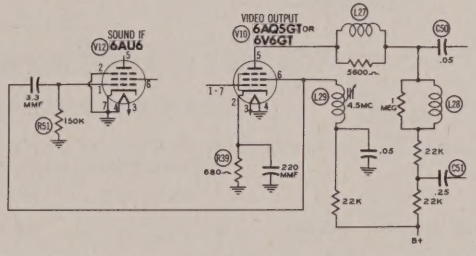
During late production of Models 17T4, 17T5, 17T6, 17C112 and 17C114 the triode connections to V17 were interchanged.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 65

Hallicrafters Models T64, 509, 510.

Production changes on Hallicrafters Models T64, 509 and 510 include changes in component values and the 4.5 megacycle sound take-off circuit.

A partial schematic below shows the revised sound take-off circuit.



Other component or circuit changes are as follows:

R34 and C43 were removed.

The low side of R30 was connected to ground.

R31 was changed to 120Ω and shunted with a 1000MMF capacitor.

R35 was changed to 2700Ω.

R68 was changed to 100K.

R43 was changed to 27K.

R42 was changed to 100K.

A 220MMF capacitor was added in parallel with C69.

R84 was changed to 470K.

A 40Ω Resistor was added between the center tap of the power transformer high voltage secondary winding to ground.

R94 was changed to 1300Ω 20W.

C4 was changed to Part Number 45B154.

A 3300Ω Resistor was added from the cathode, Pin 6, of the vertical amplifier to ground.

A 4.7Ω resistor was added in series with the filament lead to Pin 4 of V13.

PRODUCTION CHANGES
BULLETIN 32

PRODUCTION CHANGES
BULLETIN 32

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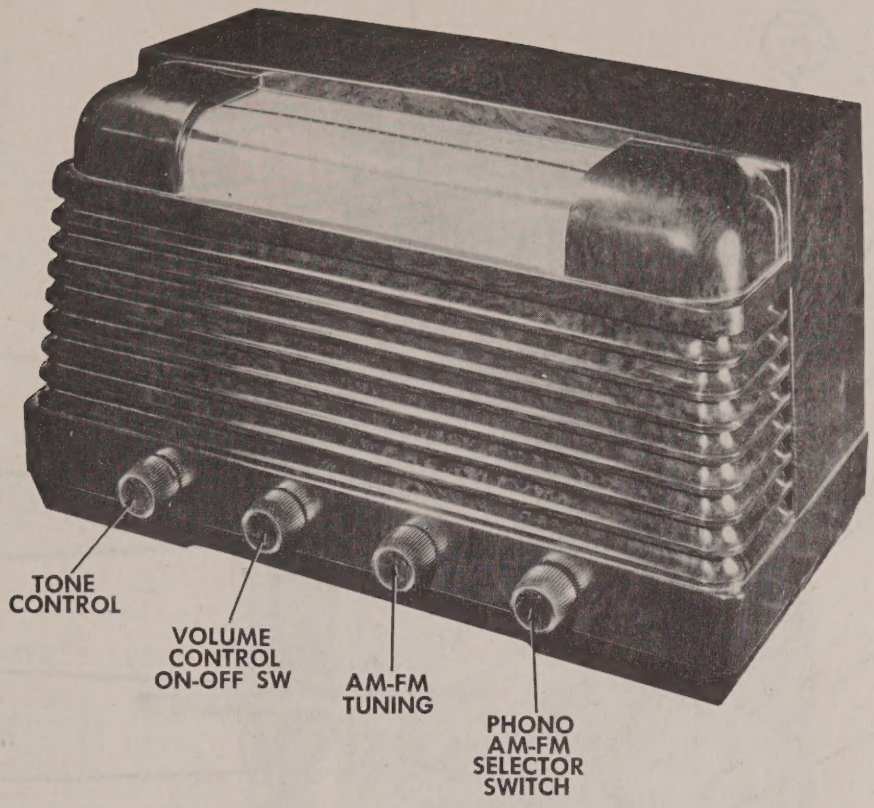
AIRLINE MODELS
15WG-1545A, B, 15WG-1546A, B

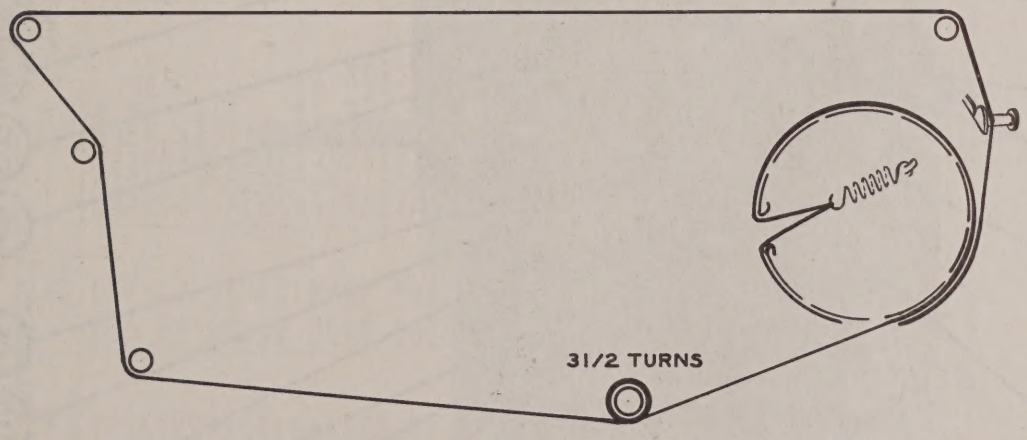


AIRLINE MODELS
15WG-1545A, B, 15WG-1546A, B

AIRLINE MODEL 15WG-1545A

TRADE NAME	Airline Models 15WG-1545A, B, 15WG-1546A, B	
SUPPLIER	Montgomery Ward & Co., 619 Chicago, Ill.	
TYPE SET (EIGHT)	Types 12AT7 FM RF Amp. -FM Mixer, 6BE6 FM Osc. -AM Conv., 6BA6 1st IF Amp. 6V6GT Audio Output, 6X5GT Rectifier	
POWER SUPPLY	105-125 Volts AC	RATING .39 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD. 88-108MC

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

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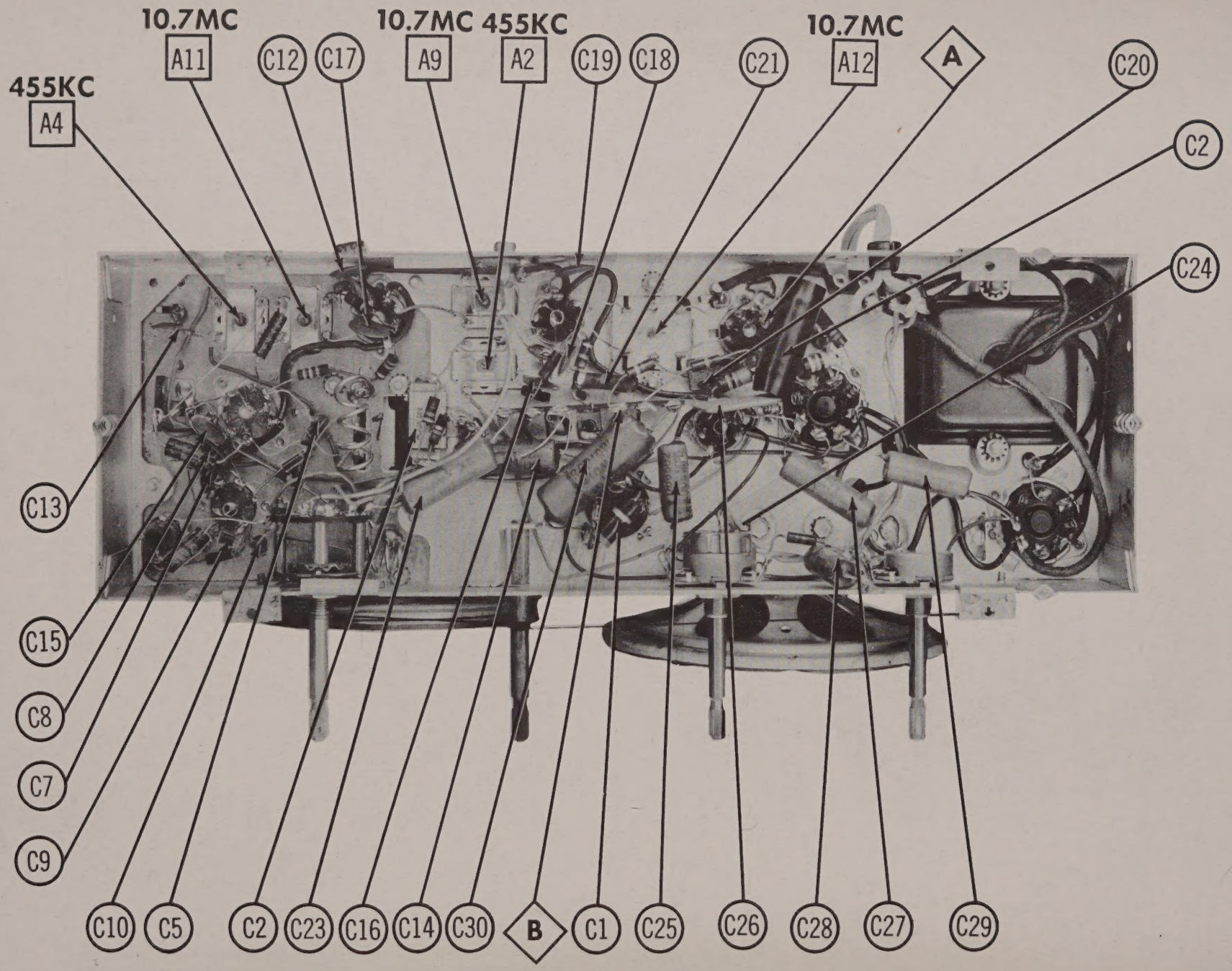
10.7MC
A11
C12
C17
10.7MC
A9
455KC
A2
C19
C18
C21
10.7MC
A12
A
C20
455KC
A4
C2
C24
C13
C15
C8
C7
C9
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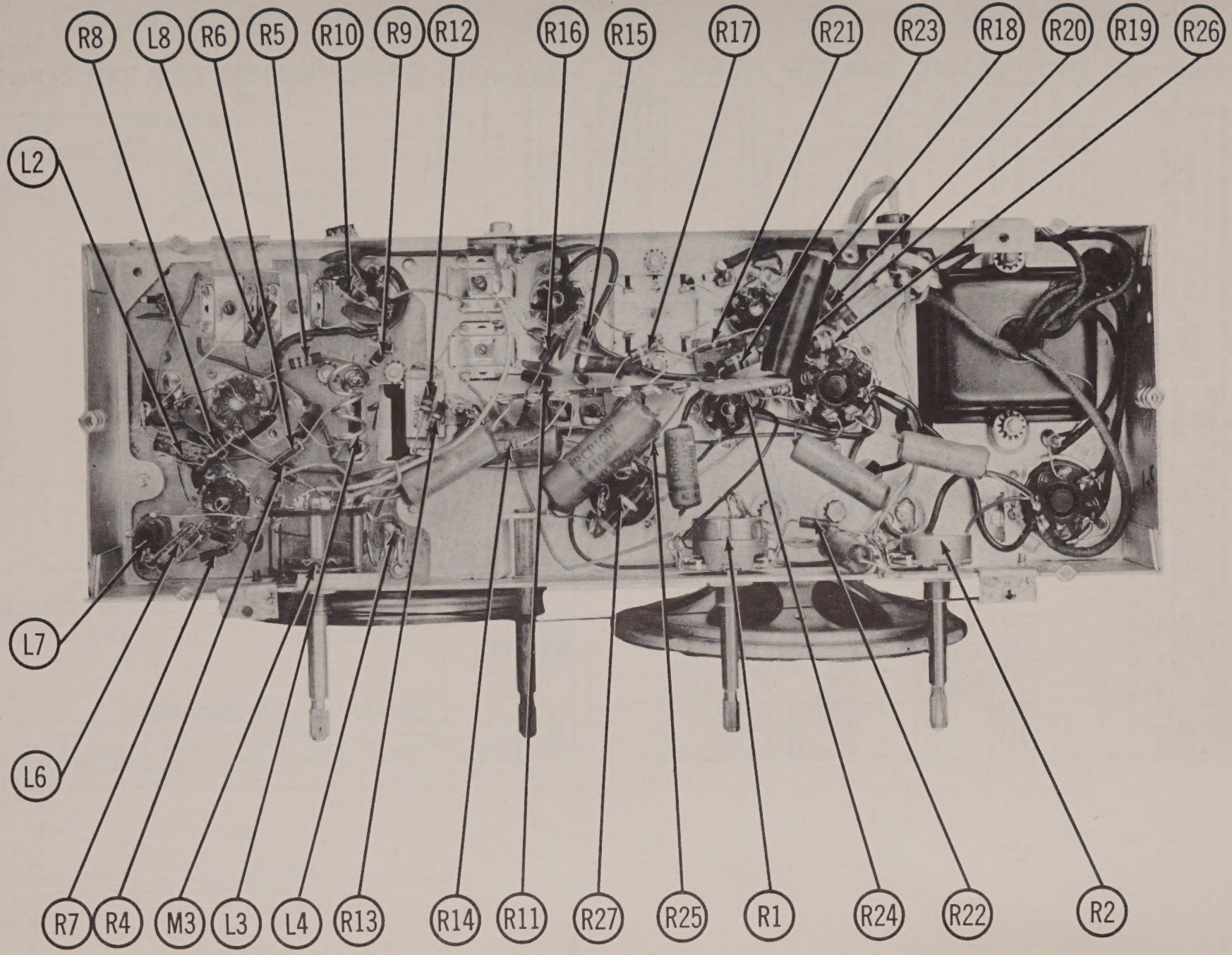
C5
C2
C23
C16
C14
C30
B
C1
C25
C26
C28
C27
C29


R8
L8
R6
R5
R10
R9
R12
R16
R15
R17
R21
R23
R18
R20
R19
R26
L2
L7
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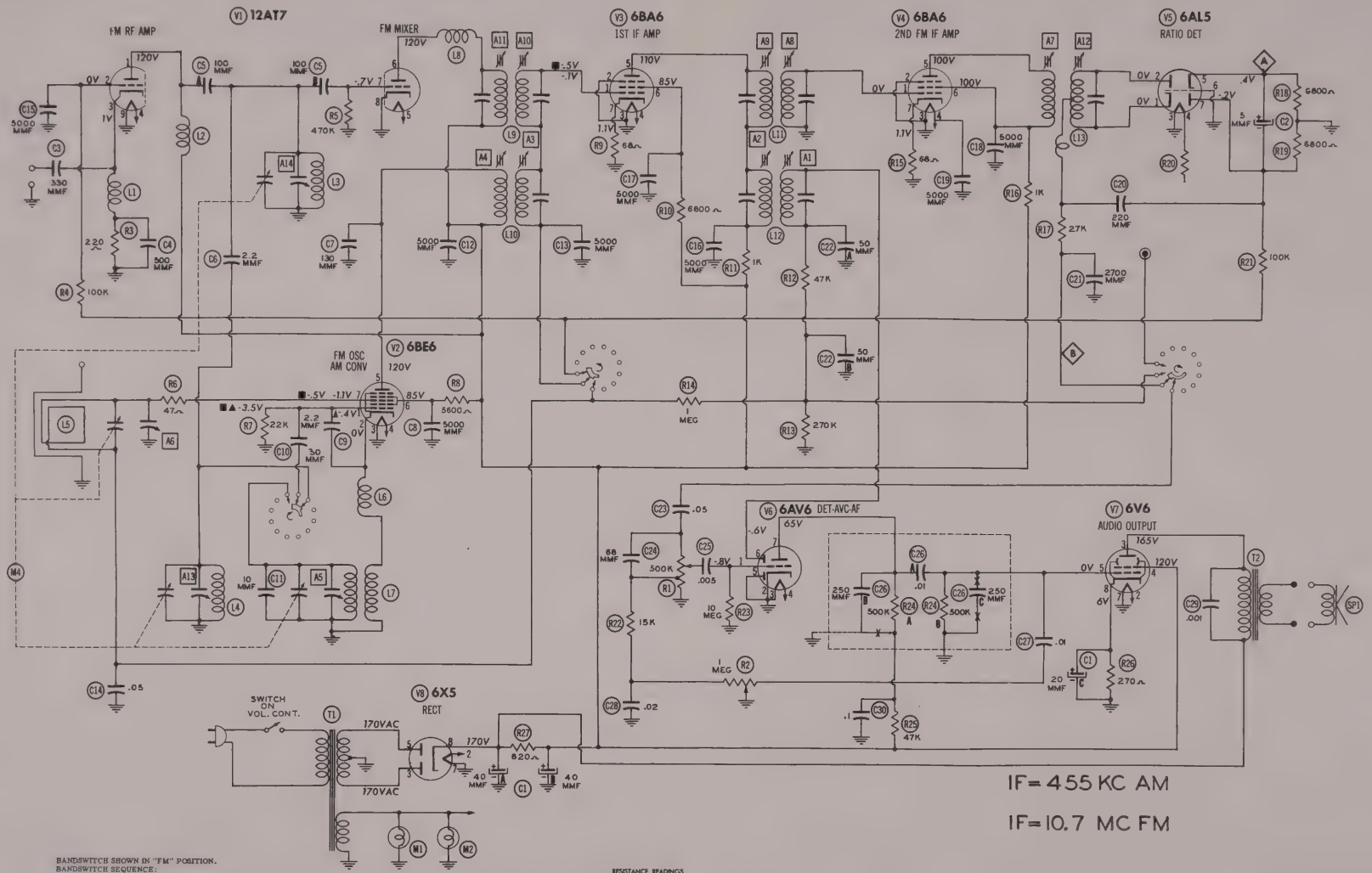
R1
R24
R22
R2



BANDSWITCH SHOWN IN "FM" POSITION.
BANDSWITCH SEQUENCE:
1. FM
2. AM
3. PHONO

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	4.7Meg	0Ω	48Ω	54Ω	†2.4KΩ	†2.4KΩ	0Ω		
V 2	12AT7	†2.8KΩ	4.7Meg	0Ω	68Ω	54Ω	†2.1KΩ	10KΩ	0Ω	60Ω
V 3	12BA6	4.8Meg	0Ω	48Ω	36Ω	†2.8KΩ †4.4KΩ	†2.8KΩ	0Ω		
V 4	12BA6	2.6Meg	0Ω	36Ω	24Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 5	12AL5	Inf.	Inf.	24Ω	12Ω	0Ω	0Ω	20KΩ		
V 6	12AV6	4.7Meg	0Ω	0Ω	12Ω	515KΩ	0Ω	†220KΩ		
V 7	50L6GT	Inf	68Ω	1430Ω	†2.2KΩ	470KΩ	Inf.	118Ω	150Ω	

▲ TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
■ MEASURED IN AM POSITION
† MEASURED FROM OUTPUT OF M2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp. -Mixer	12AT7	12AT7	9A	
V2	FM Osc. -AM Conv.	6BE6	6BE6	7CH	
V3	1st IF Amp.	6BA6	6BA6	7BK	
V4	2nd FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Det.	6AL5	6AL5	6BT	
V6	Det. -AVC-AF Amp.	6AV6	6AV6	7BT	
V7	Audio Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

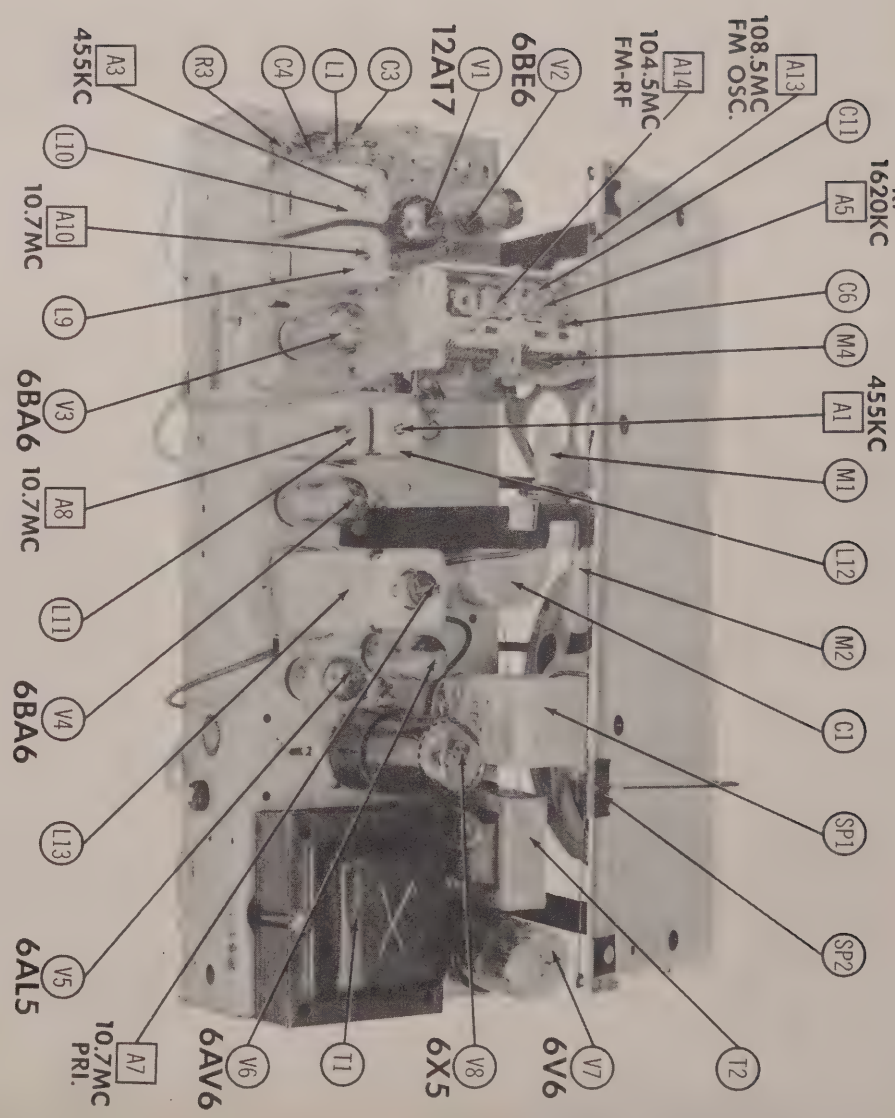
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	200	45X360	AFH3-100		UP4445C		TVL-4470	▲ Filter
B	40	150							■ Filter
C	20	25							▲ Power Output Cathode
C2	5	100	45X361	PRS150/4		BR415		TVA-1402	Stabilizing cap.
C3	330	500	47X470	1468-00035	D6-331		GP2K-331	1FM-335	FM RF Coupling
C4	500		47X508	SI500	D6-501	5W5T5	GP2K-501	5GA-T5	FM RF Amp. Cathode
C5A	100		76X4	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
B	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C6	2.2		47X557		TCZ-2.2		NP0K-2R2		FM Osc. Coupling
C7	130		47X559		TCN-130		N750L-131		AM Conv. Plate
C8	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Osc. Anode
C9	2.2		47X557		TCZ-2.2		NP0K-2R2		Osc. Feedback
C10	30		47X558		TCN-30		N750K-300		Osc. Grid Cap.
C11	10		47X523	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C12	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AM Conv. -FM Osc. Dec.
C13	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C14	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C15	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C16	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Plate
C17	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Screen
C18	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Amp. Dec.
C19	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Amp. Fil.
C20	220	500	47X468	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Diode Load Cap.
C21	2700		47X492	SI2700	D6-272	1W5D3	GP2-333-272		De-emphasis
C22A	50		47X112	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
B	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
C23	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C24	68	500	47X471	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	Tone Comp.
C25	.005	400	D66502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C26A	.01								Audio Coupling
B	250				♦PC-80			♦101C2	AF Amp. Plate
C									Audio Output Grid
C27	.01	200	B66103	P288-01	D6-103	PTE4S1	GP2-333-103	2TM-S1	Tone Comp.
C28	.02	200	B66203	P288-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C29	.001	800	H66102	P1088-001		PTE16D1		MB-D1	Audio Output Plate
C30	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Plate Dec.

♦ Items C26A, C26B, C26C, R24A,R 24B are combined in one unit.
When replacing seperately, C26B and C26C should total 250MMF

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X381	Q13-133X	AK-80	BTSK-66-S	Volume Control- Tapped @ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	1Meg	½	40X343	Q11-137	AG-61-S	AN-69	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
R3	220Ω	½	B84221	BTS-220	FM RF Cathode
R4	100KΩ	½	B85104	BTS-100K	AVC Network
R5	470KΩ	½	B85474	BTS-470K	FM Mixer Grid
R6	47Ω	½	B85470		Parasitic Suppressor
R7	22KΩ	½	B85223	BTS-22K	Osc. Grid
R8	5600Ω	½	B85562	BTS-5600	Osc. Anode
R9	68Ω	½	B84680		1st IF Cathode
R10	6800Ω	½	B84682	BTS-6800	1st IF Screen
R11	1000Ω	½	B85102	BTS-1000	1st IF Decoupling
R12	47KΩ	½	B85473	BTS-47K	Diode Filter
R13	270KΩ	½	B84274	BTS-270K	Diode Load
R14	1Meg	½	B85105	BTS-1Meg	AVC Network
R15	68Ω	½	B84680		2nd FM IF Cathode
R16	1000Ω	½	B85102	BTS-1000	2nd FM IF Decoupling
R17	27KΩ	½	B85273	BTS-27K	De-emphasis
R18	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R19	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R20	3.6Ω	2	43X233		Ratio Det. Filament- Wire Wound
R21	100KΩ	½	B85104	BTS-100K	AVC Network
R22	15KΩ	½	B85153	BTS-15K	Tone Compensation
R23	10Meg	½	B85106	BTS-10Meg	AF Amp. Grid
R24A	500KΩ	½	◆76X5	BTS-470K	AF Amp. Plate
B	500KΩ	½		BTS-470K	Output Grid
R25	47KΩ	½	B85473	BTS-47K	AF Amp. Plate Decoupling
R26	270Ω	½	B84271	BTS-270	Output Cathode
R27	820Ω	2	D84821	BW-2-820	Filter

◆ Items R24A, R24B, C26A, C26B and C26C are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .39A	340VCT .076 ADC	6.3VAC @ 3.2A		53X322		P-2952	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.5KΩ	3.3Ω	430Ω	.8Ω	51X155	A-3877	A-2930	R0-301	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P.M.	3.3Ω	12A507	ST-105 Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4 in.	9/16 in.				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	AIRLINE PART No.	MERIT PART No.	IRC PART No.	
L1	FM Ant. Coil	.22Ω		35A9		CLA	.47 Microhenries
L2	RF Choke	3Ω		35A8		CLA	3.3Microhenries
L3	FM RF Coil	0Ω		9A2066			
L4	FM Osc.	0Ω		9A2067			
L5	AM Loop Ant.	0Ω	.8Ω	9A2229			
L6	Cath. Choke	1.8Ω		35A5		CLA	
L7	AM Osc. Coil	.3Ω	5Ω	9A2065			
L8	Parasitic Supp.	0Ω		9A2103			
L9	1st FM IF	1Ω	1Ω	9A2060			
L10	1st AM IF	11Ω	12Ω	9A2062			
L11	2nd FM IF	1Ω	1Ω	9A2061			
L12	2nd AM IF	10.5Ω	11.5Ω	9A2063			
L13	Ratio Det. Trans.	1Ω	.2Ω	9A2161			Tap at .3Ω

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRLINE PART No.		
M1	Bayonet	6-8	.15	Brown	7A103		Type No. 47
M2	Bayonet	6-8	.15	Brown	7A103		Type No. 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Switch	2A395	Function Selector
M4	2 Gang Var. Cap.	14A209	(17-507MMF, 14-187MMF)
A6	Trimmer	17A256	Ant. Adj. (2-24MMF)
A13	Trimmer	17A255	FM Osc. Adj. (1-8 MMF)
	Cabinet	55X318	Brown
	Cabinet	55X418	Ivory
	Dial Glass	58X754	
	Pointer	15X269	
	Knob	10A760	Ivory
	Knob	10A761	Brown

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 2 ½ inches to the right of the left hand edge of the dial background.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis aswhen receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7, (grid) of 6BE6, (V2). Low side to chassis.	455KC (400∿mod.)	AM (center)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune for max. output.	"	A6	Fashion loops of several turns of wire and radiate signal into loop of receiver. adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	2500 MMF	High side to pin 1, (grid), of 6BA6, (V3). Low side to chassis.	10.7MC (unmod.)	FM (CW)	Tuning gang fully open.	DC probe to point A . Common to chassis.	A7, A8 A9	Adjust for maximum deflection.
5.	"	High side to pin 7, (grid), of 12AT7, (V1). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to point B. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120Ω sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	2500MMF	High side to pin 1, (grid), of 6BA6, (V3). Low side to chassis.	10.7MC (450KC Swp)	FM (CW)	Point of non-interference.	Vert. Amp. to point A . Low side to chassis.	A7, A8 A9	Disconnect stabilizor capacitor C2. Adjust for maximum amplitude and symmetry as per fig. 1.
5.	"	High side to pin 1, (grid), of 12AT7, (V1). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to point B . Low side to chassis.	A12	Reconnect Capacitor C2. Adjust A12 so 10.7MC occurs at center crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistor	High side thru 300Ω to ungrounded FM ant. terminal. Low side to chassis.	108.5MC	FM	Tuning gang fully open.	DC probe to point A . Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	104.5MC	"	Tune for max. deflection.	"	A14	"

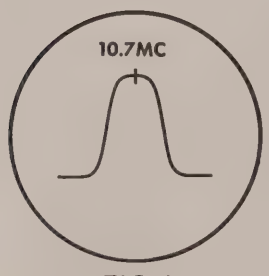


FIG. 1

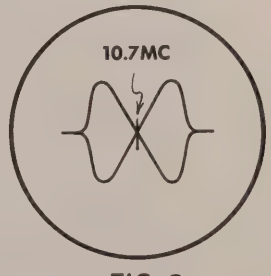


FIG. 2

PHOTOFACT* Folder

FADA
MODELS R7C15, R7C25

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MODEL R7C25

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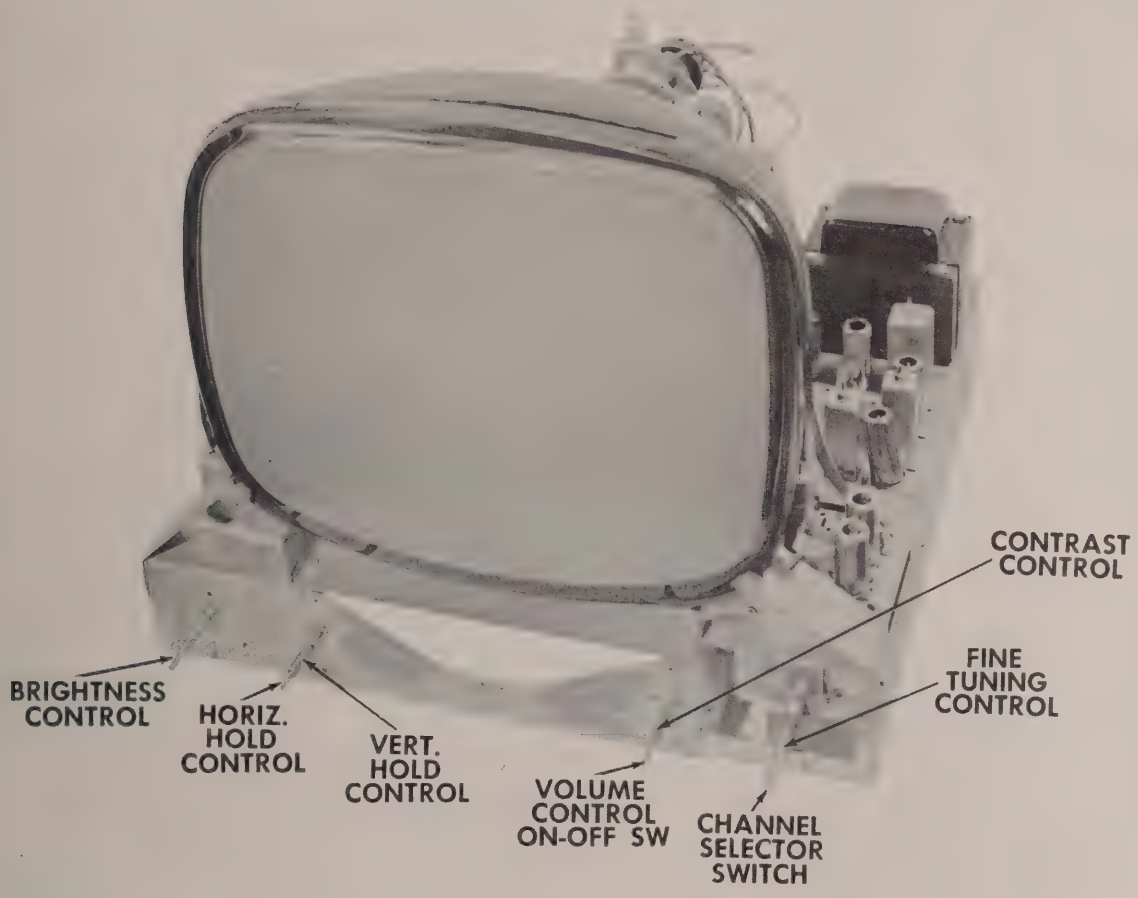
DATE 1-52 SET 158 FOLDER 3



FADA
MODELS R7C15, R7C25

FADA R7C25

TRADE NAME	Fada Models R7C15, R7C25
MANUFACTURER	Fada Radio and Electric Co. Inc., 525 Main St., Belleville, N.J.
TYPE SET	Television Receiver
TUBES	Twenty Seven
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.6 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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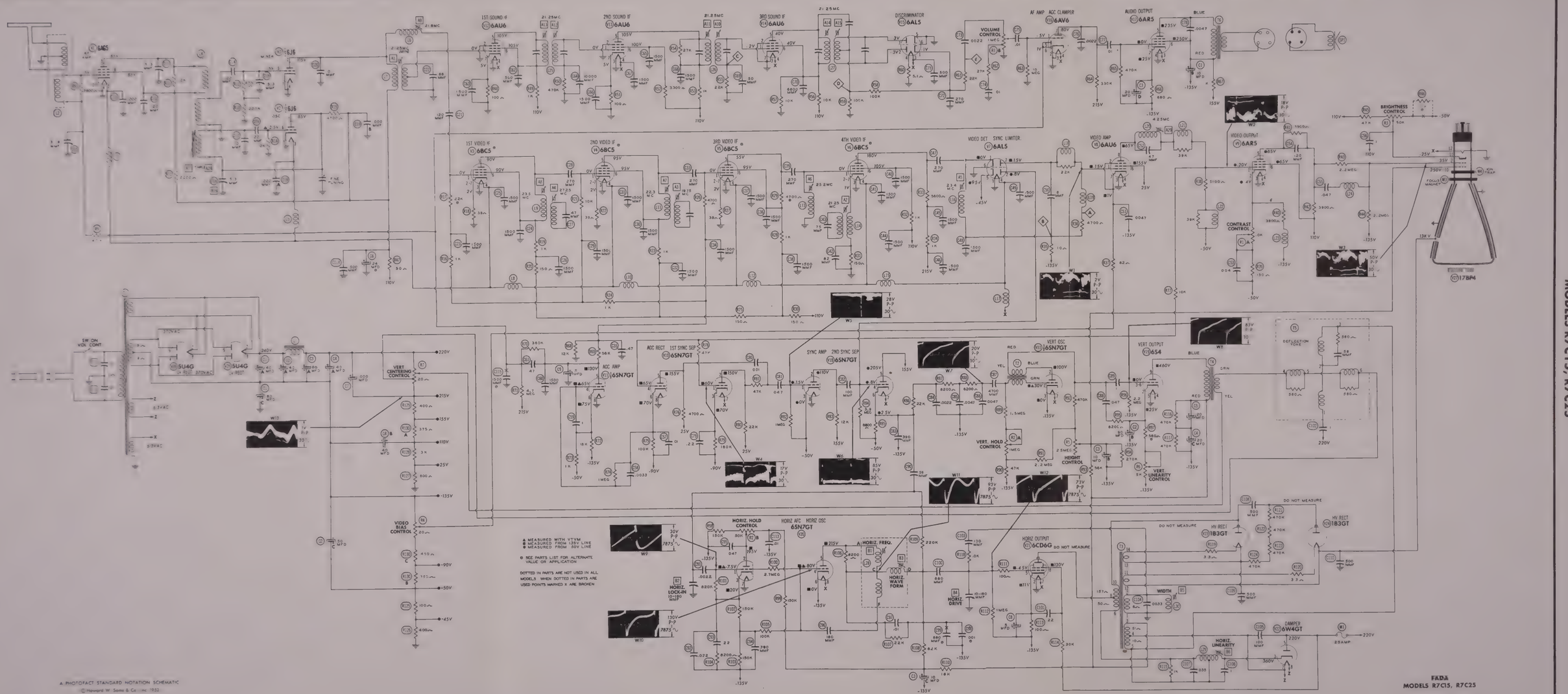

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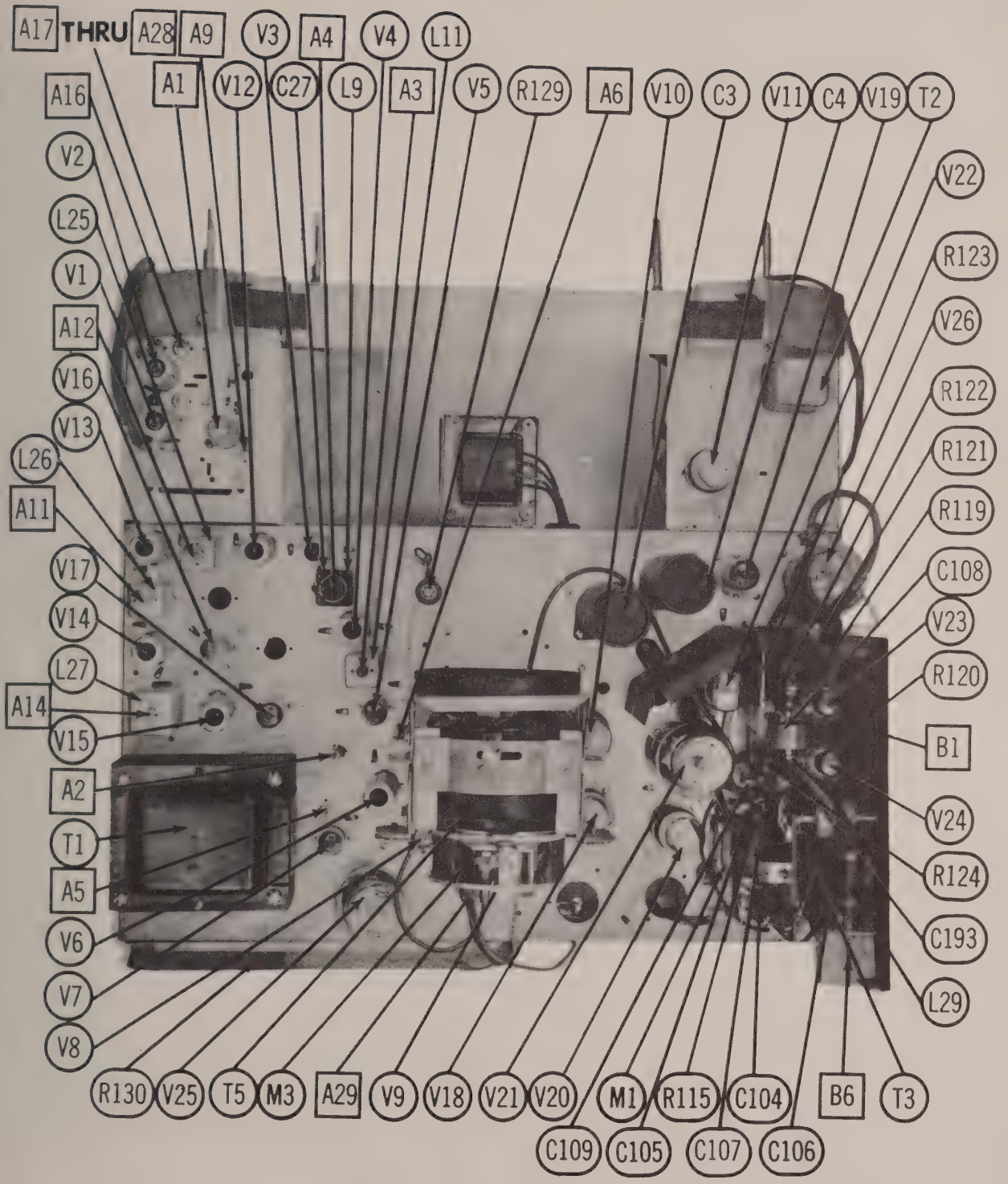
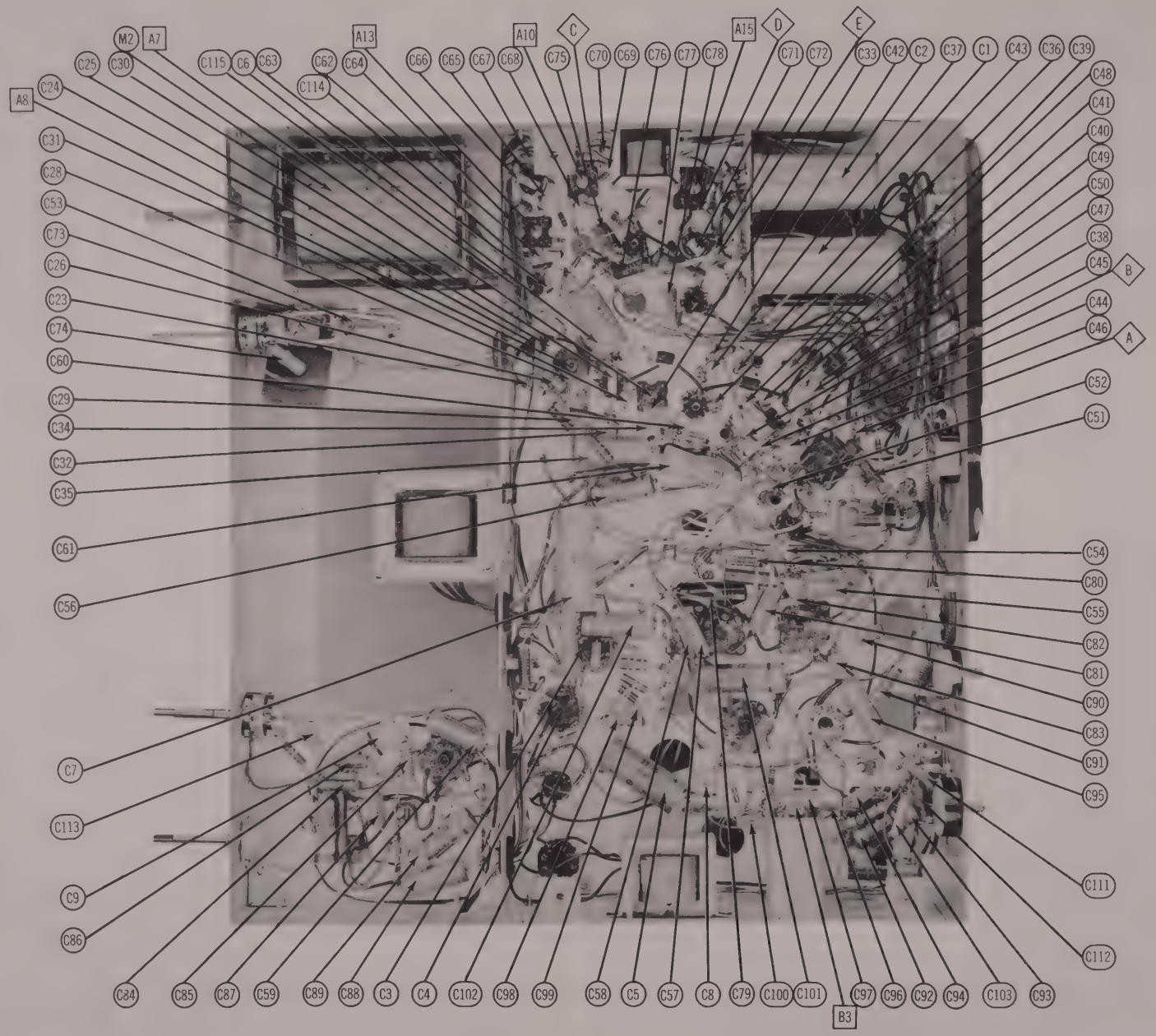
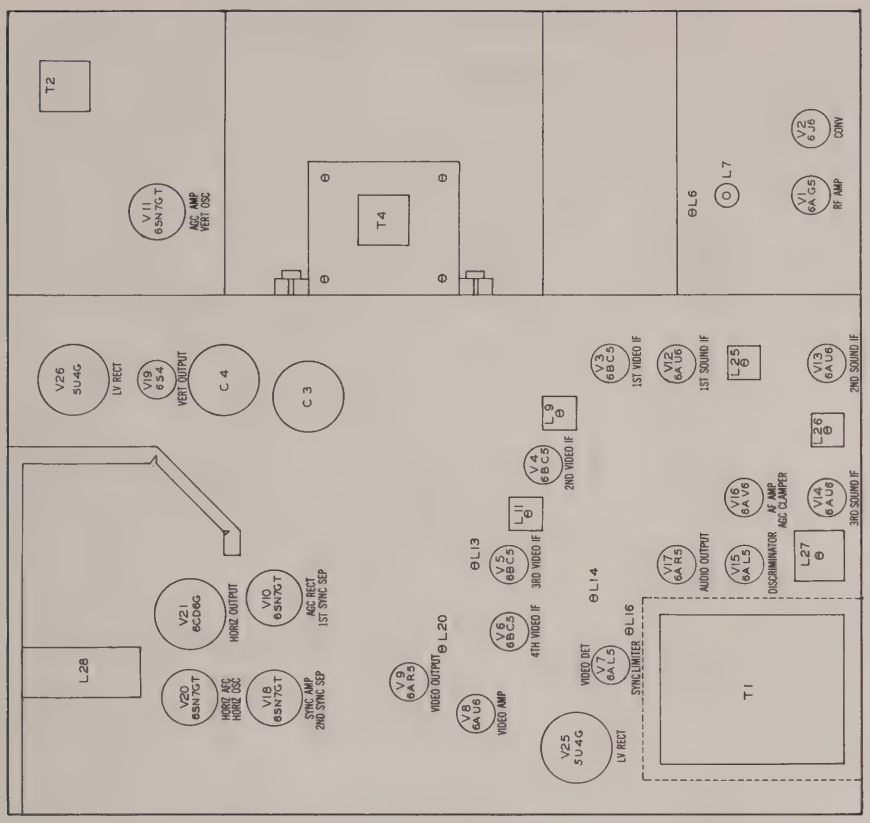
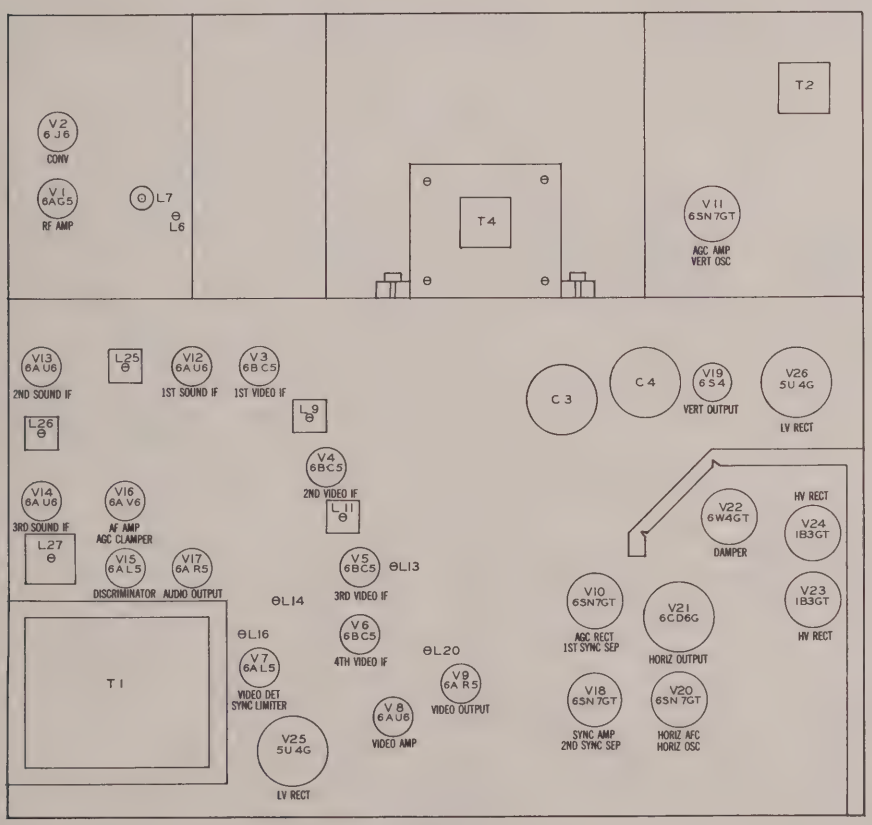


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Remove the AGC amp., (V11), from its socket. Connect the center arm and one end of a 250KΩ pot between pins 5 and 6 of V11 socket. Adjust the pot to read -3 volts on a VTVM connected across C35.
During video IF alignment the common lead of the VTVM is connected to approximately 135 volts with respect to chassis. Avoid touching or grounding the VTVM case
If sufficient indication cannot be obtained during the trap adjustments, reduce the bias to obtain a useful reading. Reset the bias to 3 volts when adjusting the IF coils.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	21.25MC	Any	DC probe to Point (A). Common to Point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	19.75	"	"	A3	"
3.	"	"	27.25MC	"	"	A4	"
4.	"	"	23.4MC	"	"	A5	Adjust for max. deflection.
5.	"	"	25.2MC	"	"	A6	"
6.	"	"	22.3MC	"	"	A7	"
7.	"	"	25.3MC	"	"	A8	"
8.	"	"	21.8MC	"	"	A9	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (10MC Swp)	21.25MC 22.2MC 25MC 25.75MC 26.5MC 27.25MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to fig.1. If necessary retouch A5 thru A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to Pin 1, (Grid) of 6AU6, (V12). Low side to chassis.	21.25MC (unmod.)	Any	DC probe thru 1Meg to Point (C). Common to chassis.	A10, A11 A12, A13	Adjust for max. deflection.
11.	"	"	"	"	DC probe thru 1 Meg to Point (D). Common to chassis.	A14	"
12.	"	"	"	"	DC probe to Point (E). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to pin 1, (grid) of 6AU6, (V12). Low side to chassis.	21.25MC (450KC Swp)	21.25MC	Any	Vert. Amp. thru 47K Ω to point (C). Low side to chassis.	A10, A11 A12, A13	Adjust for maximum amplitude and symmetry as per fig. 2.
11.	"	"	"	"	"	Vert. Amp. to point (E). Low side to chassis.	A14, A15	Adjust A15 so 21.25MC occurs at center of crossover lines as per fig. 3. Adjust A14 for maximum amplitude and straightness of crossover lines. Continue with step 13.

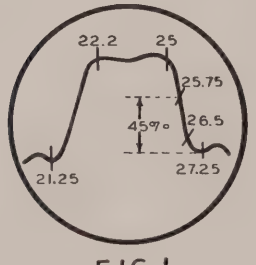


FIG. 1

FIG. 2

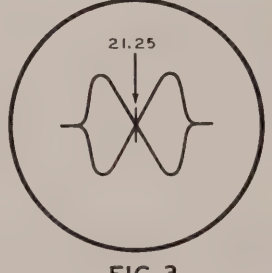


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A16. It should be noted that this is on all channel oscillator circuit adjustment and should not be adjusted for any individual channel.
If adjustment of A16 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency .
The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon resisters	Across antenna terminals with 120Ω in each lead.	215.75MC	13	DC probe to Point E. Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

4.5MC TRAP ADJUSTMENT

After alignment is completed restore set to original operation and tune in a strong TV station. Connect a short across L21 and examine the picture for evidence of 4.5MC interference, (grain effect in horizontal lines). IF interference is present adjust A29 to eliminate it. Remove the short on L21 after adjustment is completed.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short across terminals C and D of L28.

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to fully clockwise.

Adjust the horizontal frequency slug, (B1), until the picture is out of synchronization and shows one horizontal blanking signal in the picture as a single vertical bar.

Turn the hold control approximately 1/4 turn counter clockwise to synchronize the picture and examine the width and horizontal linearity. If the width and horizontal linearity are not approximately correct, make the adjustments outlined under HORIZONTAL DRIVE, WIDTH, AND LINEARITY ADJUSTMENTS. After making any of these adjustments, repeat the adjustment of B1.

Turn the hold control to fully counter-clockwise and momentarily interrupt the signal by switching to another channel and back again.

Slowly turn the hold control clockwise and carefully note the least number of sloping bars just before the picture synchronizes.

If more than 9 bars are present adjust the horizontal lock trimmer (B2), slightly clockwise. If less than 7 bars are present turn B2 slightly counter-clockwise. Repeat the check and adjustment of B2 until 7 to 9 bars are present at the pull-in point. Leave the hold control at mid-position.

Remove the short from L28.

Connect a low capacity lead from an oscilloscope vertical input to terminal C of L28. Adjust the horizontal waveform slug, (B3), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in fig. 4. If necessary during adjustment of B3, adjust B1 to keep the picture synchronized.

Turn the hold control to fully counter-clockwise and momentarily interrupt the signal by switching to another channel and back again.

Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture synchronizes.

If more than 3 bars are present adjust B2 slightly clockwise. If less than 2 bars are present adjust B2 slightly counter-clockwise.

Repeat the check and adjustment of B2 until 2 to 3 bars are present at the pull-in point.

Turn the hold control fully clockwise. The picture should be out of synchronization to the extent of one vertical bar. If not adjust B1 until one vertical bar appears in the picture.

HORIZONTAL DRIVE, WIDTH, AND LINEARITY ADJSUTMENTS

Adjust the horizontal drive trimmer, (B4), counter-clockwise as far as possible without a white vertical line appearing in the picture.

Adjust the width slug, (B5), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B6), until the picture is symmetrical from left to right.

Slight readjustment fo B4 may be necessary to obtain optimum results.

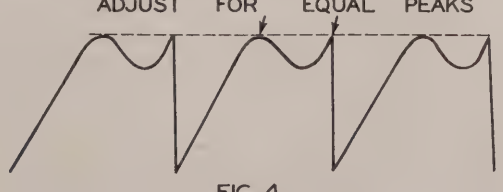


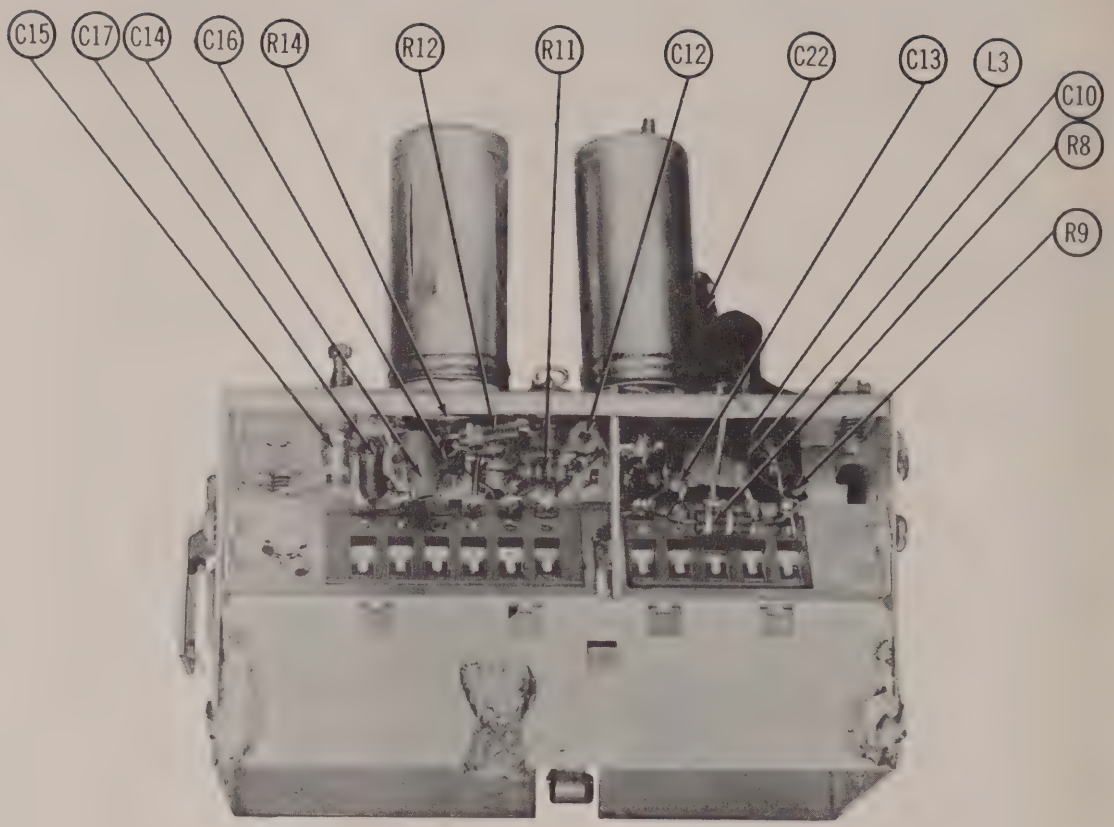
FIG. 4

RESISTANCE MEASUREMENTS

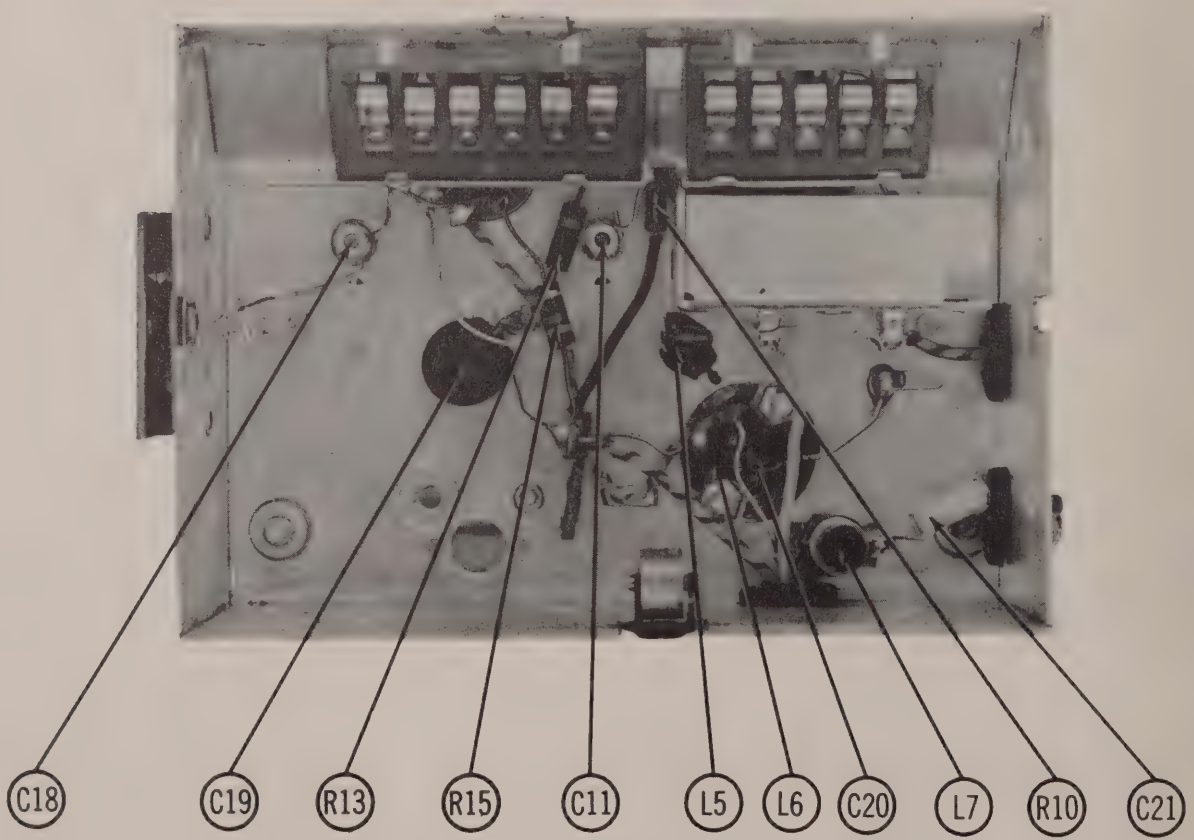
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	420KΩ	0Ω	.1Ω	0Ω	†2.9KΩ	†2.9KΩ	0Ω		
V 2	6J6	†5.4KΩ	†1KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6BC5	36KΩ	39Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	39Ω		
V 4	6BC5	23KΩ	39Ω	0Ω	.1Ω	†2.1KΩ	†2.1KΩ	39Ω		
V 5	6BC5	17KΩ	39Ω	0Ω	.1Ω	†6.7KΩ	†2KΩ	39Ω		
V 6	6BC5	.2Ω	150Ω	0Ω	.1Ω	†6.7KΩ	†1.8KΩ	150Ω		
V 7	6AL5	■11Ω	▲3.9Meg	0Ω	.1Ω	▲100Ω	0Ω	■4.7KΩ		
V 8	6AU6	■4.7KΩ	■90Ω	0Ω	.1Ω	▲5.1KΩ	†3.2KΩ	■90Ω		
V 9	6AR5	▲5.1KΩ	▲850Ω	0Ω	.1Ω	†8.6KΩ	†855Ω	INF		
V 10	6SN7GT	■62KΩ	†25KΩ	■180KΩ	■15KΩ	†8.2KΩ	■100KΩ	.1Ω	0Ω	
V 11	6SN7GT	■1.9Meg	#1.4Meg	■0Ω	▲1.1Meg	68KΩ	■1KΩ	.1Ω	0Ω	
V 12	6AU6	.1Ω	0Ω	0Ω	.1Ω	†1.8KΩ	†1.8KΩ	100Ω		
V 13	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1.8KΩ	†4.1KΩ	100Ω		
V 14	6AU6	22KΩ	0Ω	0Ω	.1Ω	†5.8KΩ	†5.8KΩ	0Ω		
V 15	6AL5	200KΩ	100KΩ	.1Ω	2Ω	0Ω	0Ω	100KΩ		
V 16	6AV6	10Meg	0Ω	0Ω	.1Ω	380KΩ	380KΩ	†330KΩ		
V 17	6AR5	■470KΩ	■680Ω	.1Ω	0Ω	†1.8KΩ	†1.5KΩ	INF		
V 18	6SN7GT	▲1Meg	†12KΩ	▲0Ω	▲3.9Meg	†500Ω	▲6.8KΩ	.1Ω	0Ω	
V 19	6S4	INF	■1.2KΩ	■2.2Meg	.1Ω	0Ω	■2.2Meg	INF	INF	#600Ω
V 20	6SN7GT	■850KΩ	#110KΩ	■280KΩ	■240KΩ	#100KΩ	■0Ω	0Ω	.1Ω	
V 21	6CD6G	INF	0Ω	■100Ω	#320KΩ	■1Meg	■0Ω	.1Ω	†30KΩ	TOP CAP #55Ω
V 22	6W4GT	INF	INF	100KΩ	INF	†60Ω	INF	#11Ω	#11Ω	
V 23	1B3GT	PINS 1 -8 HAVE INF RESISTANCE								TOP CAP #210Ω
V 24	1B3GT	PINS 1-8 HAVE INF RESISTANCE								TOP CAP #INF
V 25	5U4G	INF	3.8KΩ	INF	■19Ω	INF	■18Ω	INF	3.8KΩ	
V 26	5U4G	INF	3.8KΩ	INF	■19Ω	INF	■18Ω	INF	3.8KΩ	
V 27	17BP4	0Ω	■1.3Meg	PIN 10 #56KΩ	PIN 11 ▲15KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION- NO SIGNAL APPLIED
† MEASURED FROM PINS 8 OF V25 AND V26
# MEASURED FROM PIN 3 OF V22
■ MEASURED FROM -135VDC LINE
▲ MEASURED FROM -50 VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		FADA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3A	1st. Video IF Amp.	6BC5	6BC5	7BD	
B	1st. Video IF Amp.	6AG5	6AG5	7BD	
V4A	2nd. Video IF Amp.	6BC5	6BC5	7BD	
B	2nd. Video IF Amp.	6AG5	6AG5	7BD	
V5A	3rd. Video IF Amp.	6BC5	6BC5	7BD	
B	3rd. Video IF Amp.	6AG5	6AG5	7BD	
V6A	4th. Video IF Amp.	6BC5	6BC5	7BD	
B	4th. Video IF Amp.	6AG5	6AG5	7BD	
V7	Video Det - Sync. Limiter	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Video Output	6AR5	6AR5	6CC	
V10	AGC Rect.-Sync. Sep.	6SN7GT	6SN7GT	8BD	
V11	AGC Amp. Vert. Osc.	6SN7GT	6SN7GT	8BD	
V12	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V13	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V14	3rd. Sound IF Amp.	6AU6	6AU6	7BK	
V15	Discriminator	6AL5	6AL5	6BT	
V16	Audio Amp. AGC Clamper	6AV6	6AV6	7BT	
V17	Audio Output	6AR5	6AR5	6CC	
V18	Sync. Amp.-2nd Sync. Sep.	6SN7GT	6SN7GT	8BD	
V19	Vert. Output	6S4	6S4	9AC	
V20	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V21	Horiz. Output	6CD6G	6CD6G	5BT	
V22	Damper	6W4GT	6W4GT	4CG	
V23	H.V. Rect.	1B3GT	1B3GT	3C	
V24	H.V. Rect.	1B3GT	1B3GT	3C	
V25	L.V. Rect.	5U4G	5U4G	5T	
V26	L.V. Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	FADA PART No.	SYLVANIA PART No.	THOMAS PART No.		
V27	17BP4	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450		AFH3-148		UPT4145-820		TVL-3761	▲ Filter ■ Audio Output Dec. ▲ Bias Filter
B	10	450							
C	80	200							
C2A	40	450		AFH3-145		UPT445-9515		TVL-3708	▲ Filter ■ Vert. Output Cathode ▲ Bias Filter
B	90	150							
C	50	150							
C3A	60	450		AFH4-88		UPT61145-215		TVL-4753	▲ Filter ■ Decoupling ▲ Decoupling
B	10	450							
C	10	450							
D	20	150							Audio Output Cathode
C4A	40	450		AFH2-57		UPT4445		TVL-2764	▲ Filter
B	40	450		PRS450/20		BR2045A		TVA-1709	■ Bias Filter
C	20	450							▲ Decoupling
C5	20	450		PRS450/20		BR2045A		TVA-1709	Decoupling
C6	24	300		PRS350/24		BR2035A		TVA-1608	Decoupling †
C7	1000	6		PRS6/1000		BRH610		TVA-1104	Vert. Centering Bypass
C8	5	50		PRS150/4		BR550		TVA-1303	Horiz. Output Cathode
C9	5	50		PRS150/4		BR550		TVA-1303	AGC Filter
C10	3-9				829-10				Variable Trimmer
C11	.5-3				829-3				Variable Trimmer
C12	120			SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Decoupling
C13	1000			SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100			SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C15	.5-3				829-3				Variable Trimmmer
C16	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C17	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C18	.5-3				829-3				Variable Trimmer
C19A	1000			BPD-2X001	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C20	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C21	120			SI120	D6-121		GP2K-121	5GA-T12	Video IF Coupling
C22	68	500		1469-00007		5R5Q7		MS-47	Fixed Trimmer
C23	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C24	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	1st Video IF Dec.
C25	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	1st Video IF Fil.
C26	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C27	47			SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C28	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Video IF Coupling
C29	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C30	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd Video IF Dec.
C31	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd Video IF Fil.
C32	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C33	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Video IF Coupling
C34	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C35	.47	200		P288-47		GT2P5		2TM-P47	AGC Filter
C36	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd Video IF Screen
C37	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd Video IF Fil.
C38	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C39	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Video IF Coupling
C40	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	4th Video IF Screen

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C41	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	4th Video IF Fil.
C42	82	500		S182			GP1K-820		4th Video IF Cathode
C43	75			S175NP0	TCZ-75		NP0-333-750		Fixed Trimmer
C44	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	RF Bypass
C45	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	RF Bypass
C46	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	RF Bypass
C47	270	500		1468-0003	D6-271	5WST3	GP1K-271	MS-33	Video IF Coupling
C48	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	Bias Filter
C49	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	Video Det. Fil.
C50	6						NP0K-060		Video Det. Filter
C51	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Video Amp. Cathode
C52	47			S147NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C53	.004	600		P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Contrast Cont. Shunt
C54	120			S120	D6-121	5WST15	GP2K-121	5GA-T12	Video Coupling
C55	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C56	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C57	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AGC Rect. Cathode
C58	.0033	600		P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	AGC Coupling
C59	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	AGC Filter
C60	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	AGC Filter
C61	.47	200		P288-47		GT2P5		2TM-P47	AGC Filter
C62	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	1st Sound IF Dec.
C63	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	1st Sound IF Cathode
C64	10000			BPD-01	DD-103	ID3S1	831-01	5HK-S1	2nd Sound IF Grid
C65	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	2nd Sound IF Screen
C66	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	2nd Sound IF Cathode
C67	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	2nd Sound IF Filament
C68	1500			S11500	D6-152	1WSD15	GP2L-152	5HK-D15	2nd Sound IF Plate
C69	50			S150	D6-500	5WSQ5	GP1K-500	5GA-Q5	3rd.Sound IF Grid
C70	6800			S16800	D6-682	ID5D7	GP2-333-682	5HK-D68	3rd.Sound IF Dec.
C71	500			S1500	D6-501	5WST5	GP2K-501	5GA-T5	Disc.Fil.
C72	270	500		1468-0003	D6-271	5WST3	GP2K-271	MS-33	RF Bypass
C73	.0022	600		P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Audio Coupling
C74	.01	200		P288-01	D6-103	PTE4S1	GP2-333-103	2TM-S1	Tone Comp.
C75	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C76	.0022	600		P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	AF Amp. Plate
C77	.01	1000		P1068-01		PTE6S1		MB-S1	Audio Coupling
C78	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C79	.22	200		P488-22		GT4P2		2TM-P22	1st.Sync.Sep. Cathode
C80	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Sync. Coupling
C81	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Sync.Coupling
C82	900	500		1468-0001	D6-101	5WST1	GP1K-101	1FM-31	Sync. Coupling
C83	390	500		1468-0004	D6-391	5WST4	GP2K-391	1FM-34	Vert.Sync. Coupling
C84	.0022	600		P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Vert. Integrator Net
C85	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net
C86	.0047	600		P688-0047	D6-472	PTE6D5			Vert. Integrator Net.
C87	4700	500		1464-005		1DR5D5		MS-25	Vert.Osc.Grid Cap.
C88	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Vert.Discharge
C89	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert.Sweep Coupling
C90	56	500						MS-46	Horiz.Sync.Coupling
C91	.0022	600		P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Horiz.Sync. Coupling
C92	.022	400		P488-022	DF-203	PTE4S2		4TM-S22	Horiz.AFC Filter
C93	.22	400		P488-22		GT4P2		4TM-P22	Horiz. AFC Filter
C94	390	500		1468-0004	D6-391	5WST4	GP2K-391	1FM-34	Horiz. AFC Filter
C95	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Horiz. AFC Plate
C96	180	1000							Horiz.Osc.Grid Cap.
C97	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C98	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Discharge †
C99	680	1000							Horiz. Discharge ‡
C100	680	1000							Horiz. Sweep Coupling
C101	.22	600		684-25		GP6P25		6TM-P25	Horiz.Output Screen
C102	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz.Sweep Coupling
C103	300	2500							Horiz. Feedback
C104	.0033	600		P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	Fixed Trimmer
C105	100	2500							Fixed Trimmer
C106	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Damper Filter
C107	.033	600		P688-033		PTE6S3		6TM-S33	Damper Filter
C108	500	10000		HV10A	TV1-501		410-510	501C1	HV Doubler
C109	500	10000		HV10C	TV3-501				HV Filter
C110	500	20000		HV20C	TV3-502				HV Filter
C111	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C112	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C113	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. Hold Bypass
C114	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C115	1500			S11500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter *

* Not used in all models.
† Some models use 20MFD in this application.
‡ Some models use .0017 MFD in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R 1A	10KΩ			Concentrikit			
B	1Meg		52.67	B17-116 * B13-137X * E-187 * 76-1 *	RTV-207		Contrast Control - Panel Volume Control & Switch - Rear Attach per instructions in "Concentrikit"
C	Shaft end						
D	Switch						
R2A	1Meg			Concentrikit			
B	50KΩ		52.66	B11-137 * B11-123 * E-187 *	RTV-110	SBB-510	Vertical Hold Control - Panel Horizontal Hold Control - Rear Attach per instructions in "Concentrikit"
C	Shaft end						
R3A	50KΩ	1	52.69	Q11-123	AG-44-S	B-31	Brightness Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
R4	20Ω	1	52.52	W-20	43-20	VK-110	AGC Control
R5A	2.5Meg		52.24	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	5000Ω	2	52.68	W-5000	43-5000	VK-135	Vertical Linearity Control - Wire Wound
R7	20Ω	2	52.26	W-20X10	RTV-98	SVT-901	Vertical Centering - Wire Wound

* Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ± 10% unless otherwise specified
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	1		BTS-47K	RF Amplifier Grid
R10	2200Ω 20%	1		BTS-2200	RF Amplifier Decoupling
R11	10KΩ	1			RF Coil Shunt
R12	4700Ω 20%	1		BTS-4700	Mixer Grid
R13	220KΩ 20%	1		BTS-220K	Mixer Grid
R14	10KΩ	1			Oscillator Grid
R15	4700Ω	1		BTS-4700	Oscillator Plate
R16	1000Ω	1		BTS-1000	AGC Network
R17	22KΩ	1		BTS-22K	1st Video IF Grid See Note 1.
R18	39Ω	1			1st Video IF Cathode
R19	1000Ω	1		BTS-1000	1st Video IF Decoupling
R20	150Ω	1		BTA-150	1st Video IF Decoupling
R21	10KΩ 5%	1		BTS-10K-5%	2nd Video IF Grid
R22	39Ω	1			2nd Video IF Cathode
R23	1000Ω	1		BTS-1000	2nd Video IF Decoupling
R24	1000Ω 20%	1		BTS-1000	AGC Network
R25	150Ω	1		BTA-150	Decoupling
R26	4700Ω 5%	1		BTS-4700-5%	3rd Video IF Grid
R27	39Ω	1			3rd Video IF Cathode
R28	1000Ω	1		BTS-1000	3rd Video IF Decoupling
R29	4700Ω 5%	1		BTS-4700-5%	3rd Video IF Plate See Note 2.
R30	150Ω	1		BTS-150	Decoupling
R31	150Ω	1		BTS-150	4th Video IF Cathode
R32	1000Ω	1		BTS-1000	4th Video IF Screen
R33	5600Ω 5%	1		BTS-5600-5%	4th Video IF Plate
R34	1000Ω	1		BTS-1000	4th Video IF Plate Decoupling
R35	10Ω 20%	½		BW-½-10	Decoupling
R36	4700Ω	1		BTA-4700	Video Amplifier Grid
R37	82Ω	1		BTS-82	Video Amplifier Cathode
R38	5100Ω 5%	1			Video Amplifier Plate
R39	150Ω	1		BTS-150	Video Output Cathode
R40	3900Ω	2		BTB-3900	Video Output Cathode
R41	3900Ω	2		BTB-3900	Video Output Plate
R42	3900Ω	2		BTB-3900	Video Output Plate
R43	2.2Meg	½		BTS-2.2Meg	Video Peaking
R44	2.2Meg	½		BTS-2.2Meg	Picture Tube Grid
R45	47KΩ	1		BTS-47K	Voltage Divider
R46	10KΩ	1		BTS-10K	Voltage Divider See Note 3.
R47	150Ω	1		BTS-150	Decoupling
R48	100Ω	1		BTS-100	1st Sound IF Cathode
R49	1000Ω	1		BTS-1000	1st Sound IF Decoupling
R50	470KΩ 20%	1		BTS-470K	2nd Sound IF Grid
R51	100Ω 20%	1		BTS-100	2nd Sound IF Cathode
R52	3300Ω 20%	1		BTS-3300	2nd Sound IF Screen
R53	1000Ω	1		BTS-1000	2nd Sound IF Plate Decoupling
R54	27KΩ	1		BTS-27K	2nd Sound IF Trans. Shunt
R55	22KΩ	1		BTS-22K	3rd Sound IF Grid
R56	10KΩ	1		BTA-10K	3rd Sound IF Decoupling
R57	10KΩ	1		BTS-10K	Bleeder
R58	100KΩ	1		BTS-100K	Discriminator Diode Load
R59	100KΩ	1		BTS-100K	Discriminator Diode Load
R60	5.1Ω	10			Discriminator Filament Dropping Wire-Wound
R61	22KΩ	1		BTS-22K	De-emphasis
R62	27KΩ	1		BTS-27K	Tone Compensation
R63	10Meg 20%	½		BTS-10Meg	Audio Amplifier Grid
R64	330KΩ 20%	1		BTS-330K	Audio Amplifier Plate
R65	470KΩ	1		BTS-470K	Audio Output Grid
R66	680Ω	1		BTA-680	Audio Output Cathode
R67	1000Ω	10		1 3/4A-1000	Audio Output Decoupling Wire-Wound
R68	12KΩ	1		BTS-12K	AGC Network
R69	56KΩ 5%	1		BTS-56K-5%	AGC Network
R70	360KΩ 5%	1			AGC Network
R71	4.7Meg 5%	1		BTA-4.7Meg 5%	AGC Network
R72	18KΩ 20%	1		BTS-18K	AGC Amplifier Cathode
R73	1000Ω 20%	1		BTS-1000	AGC Amplifier Cathode
R74	1Meg	½		BTS-1Meg	AGC Amplifier Grid
R75	100KΩ	1		BTS-100K	AGC Rectifier Cathode
R76	4700Ω	1		BTA-4700	AGC Rectifier Plate
R77	10KΩ	1		BTS-10K	Isolation
R78	47KΩ	1		BTS-47K	Isolation
R79	180KΩ	1		BTS-180K	Sync. Seperator Cathode
R80	22KΩ	1		BTS-22K	Sync. Seperator Plate
R81	47KΩ	1		BTS-47K	Sync. Peaking
R82	1Meg	½		BTS-1Meg	Sync. Amplifier Grid
R83	12KΩ	2		BTB-12K	Sync. Amplifier Plate
R84	3.9Meg	½		BTS-3.9Meg	Sync. Seperator Grid
R85	6800Ω	½		BTS-6800	Sync. Seperator Cathode
R86	22KΩ	½		BTS-22K	Integrator Network
R87	8200Ω	½		BTS-8200	Integrator Network
R88	8200Ω	1		BTS-8200	Integrater Network
R89	1.5Meg 5%	½		BTS-1.5Meg 5%	Vertical Oscillator Grid
R90	47KΩ	1		BTS-47K	Bias Network
R91	2.2Meg	½		BTS-2.2Meg	Bias Network
R92	470KΩ 20%	½		BTS-470K	Vertical Oscillator Plate
R93	56KΩ 5%	1		BTS-56K 5%	Filter
R94	270KΩ	½		BTA-270K	Bleeder
R95	8200Ω	1		BTS-8200	Vertical Peaking
R96	2.2Meg	½		BTS-2.2Meg	Vertical Output Grid
R97	560Ω	2		BTB-560	Vertical Output Cathode See Note 4.
R98	150KΩ	1		BTA-150K	Voltage Divider
R99	150KΩ	1		BTA-150K	Voltage Divider
R100	2.7Meg	1		BTA-2.7Meg	Voltage Divider
R101	820KΩ	1		BTS-820K	Horizontal AFC Grid
R102	150KΩ	1		BTS-150K	Horizontal AFC Cathode
R103	150KΩ 5%	1		BTA-150K-5%	Horizontal AFC Cathode
R104	8200Ω	1		BTS-8200	AFC Filter
R105	100KΩ 5%	1		BTA-100K 5%	Horizontal Oscillator Grid
R106	8200Ω 5%	1		BTS-8200 5%	Horizontal Oscillator Coil Shunt
R107	22KΩ	1		BTS-22K	Horizontal Oscillator Coil Shunt
R108	82KΩ	1		BTA-82K	Horizontal Oscillator Plate
R109	220KΩ	2		BTS-220K	AFC Feedback
R110	18KΩ	2		BTB-18K	Decoupling

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FADA PART No.	IRC PART No.	IDENTIFICATION CODES
R111	100Ω	½			Parasitic Suppressor
R112	1Meg	½		BTS-1Meg	Horizontal Output Grid
R113	100Ω	5		1 3/4A-100	Horizontal Output Cathode Wire Wound
R114	30KΩ	10		2D-30K	Horizontal Output Screen Wire Wound
R115	1000Ω	1		BTA-1000	Horizontal Linearity Coil Shunt
R116	470KΩ 20%	½		BTS-470K	Bleeder
R117	470KΩ 20%	½		BTS-470K	Bleeder
R118	10KΩ	½		BTS-10K	Feedback
R119	3.3Ω	½			HV Rectifier Filament Wire Wound
R120	3.3Ω	½			HV Rectifier Filament Wire Wound
R121	470KΩ	2			HV Rectifier Load
R122	470KΩ	2			HV Rectifier Load
R123	470KΩ	2			HV Rectifier Load
R124	470KΩ	2			HV Rectifier Load
R125	100Ω	5		1 3/4A-100	Bias Network Wire Wound
R126	400Ω	10		1 3/4A-400	Bias Network Wire Wound
R127	800Ω	5		1 3/4A-800	Voltage Divider Wire Wound
R128	3000Ω	10		1 3/4A -3000	Voltage Divider Wire Wound
R129	400Ω	20		DG-400	Voltage Divider Wire Wound
R130A	375Ω	10			Voltage Divider Wire Wound
B	350Ω	10			Bias Network Wire Wound
C	450Ω	10			Bias Network Wire Wound

Note 1. Some models may use a 10KΩ resistor in this application.
Note 2. Some models may use a 2700Ω resistor in this application.
Note 3. Not used in all models.
Note 4. Some models may use a 680Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑤3.6A	720VCT .290ADC	5VAC 6A	6.3VAC ④11A SEC.4 6.3VAC ⑤1.2A	42.58			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	150Ω	1300Ω	42.15-3	A-8111	A-4000	TB0-1	Vert.Osc. Trans, Horiz. Output Trans.
T3	207Ω tapped ③50Ω	61Ω tapped ④10Ω SEC.2 .6Ω SEC.3 0Ω SEC.4 0Ω					
T4	590Ω	6.5Ω	42.14-3	A-8115	A-3035	TS0-1	Vert.Output Trans.
T5A	13Ω		37.242	DY-8	MDF-70		Hor.Deflection Coils
B	49Ω						Vert. Deflection Coils

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	8.2KΩ	3.7Ω	390Ω	.6Ω	42.16	A-8114	A-2931	R0-13	

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA FADA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.7Ω	107.47	10712	10A31	
	CONE DIA.	V. C. DIA.				
SP2	9 1/4"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.290ADC	60Ω	1.4 Henries		C-2326 ②	C-2996 ②	TR-3300 ②	②. Drill One New Mounting Hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

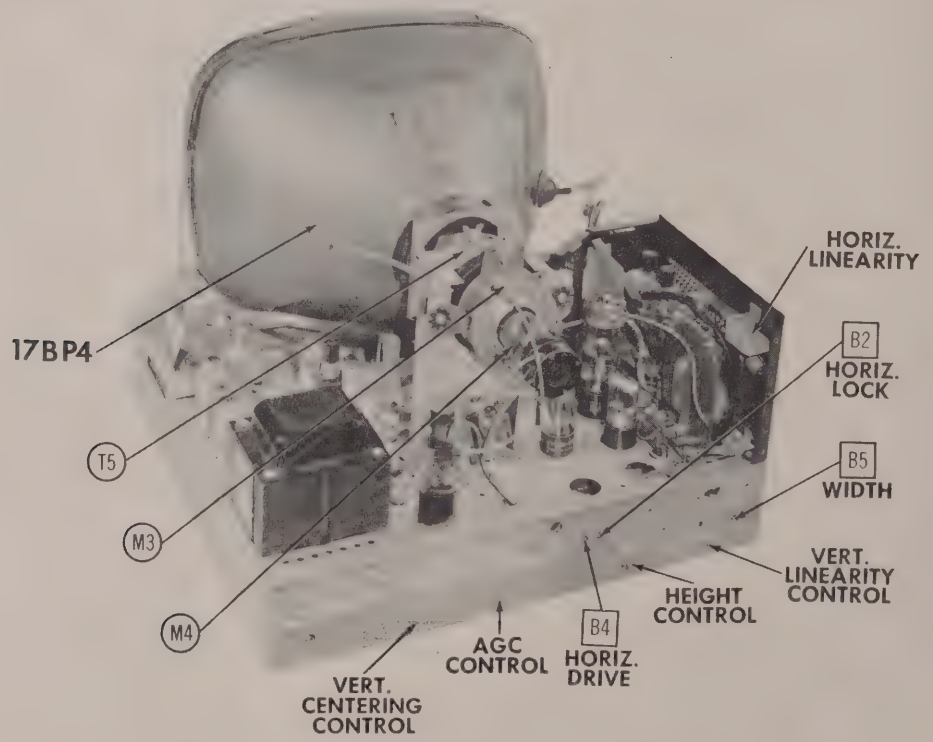
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FADA PART No.	MERIT PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF, Mixer, Grid & Osc. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	1st. Video IF	1Ω				
L7	Conv. Plate & Sound Take Off	1.7Ω	0Ω			
L8	Fil. Choke	0Ω				
L9	2nd. Video IF	.2Ω				Includes Trap
L10	Fil. Choke	0Ω				
L11	3rd. Video IF	.2Ω				Includes Trap
L12	Fil. Choke	0Ω				
L13	4th. Video IF	.2Ω				
L14	Sound Trap	0Ω	0Ω			
L15	Fil. Choke	0Ω				
L16	5th. Video IF	.2Ω				
L17	Fil. Choke	0Ω				
L18	Peaking Coil	4.8Ω				120 Microhenries, Blue Dot, Wound on 22KΩ Resistor
L19	Peaking Coil	7.4Ω				250 Microhenries, Purple Dot
L20	4.5MC Trap	2.5Ω				
L21	Peaking Coil	6.2Ω				180 Microhenries, White Dot, Wound on 39KΩ Resistor
L22	Peaking Coil	6.2Ω				180 Microhenries, White Dot, Wound on 39KΩ Resistor
L23	Peaking Coil	4.2Ω				93 Microhenries, Red Dot
L24	Peaking Coil	6.8Ω				120 Microhenries, Blue and Red Dot
L25	1st. Sound IF	.1Ω	.1Ω			
L26	2nd. Sound IF	.1Ω	.1Ω			
L27	Disc. Trans.	.1Ω	.1Ω			
L28	Horiz. Osc.	70Ω				Tap at 55Ω. Waveform Winding 42Ω
L29	Horiz. Lin.	5.7Ω				Tap at 1.6Ω
L30	Width Coil	2.25Ω				

FUSES

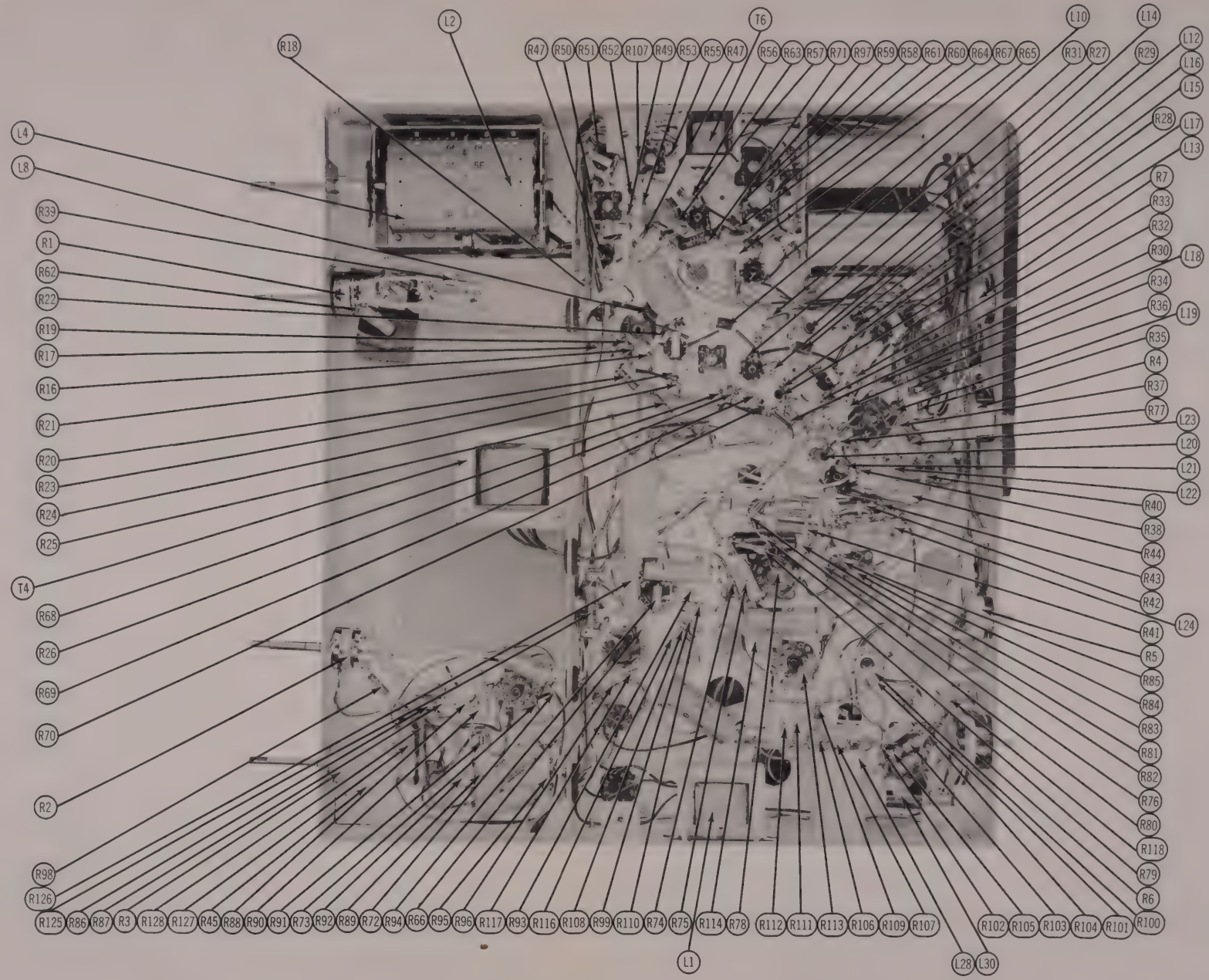
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			FADA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4	122.22		312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
M2	RF Tuner	TV-201	
M3	Focus Magnet	112.26	
M4	Ion Trap	112.23	
B2			
B4	Trimmer		(Dual) Horiz. Drive, Horiz. Lock-10-160MMF



CHASSIS–REAR VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

FIRESTONE
MODEL 13-G-57

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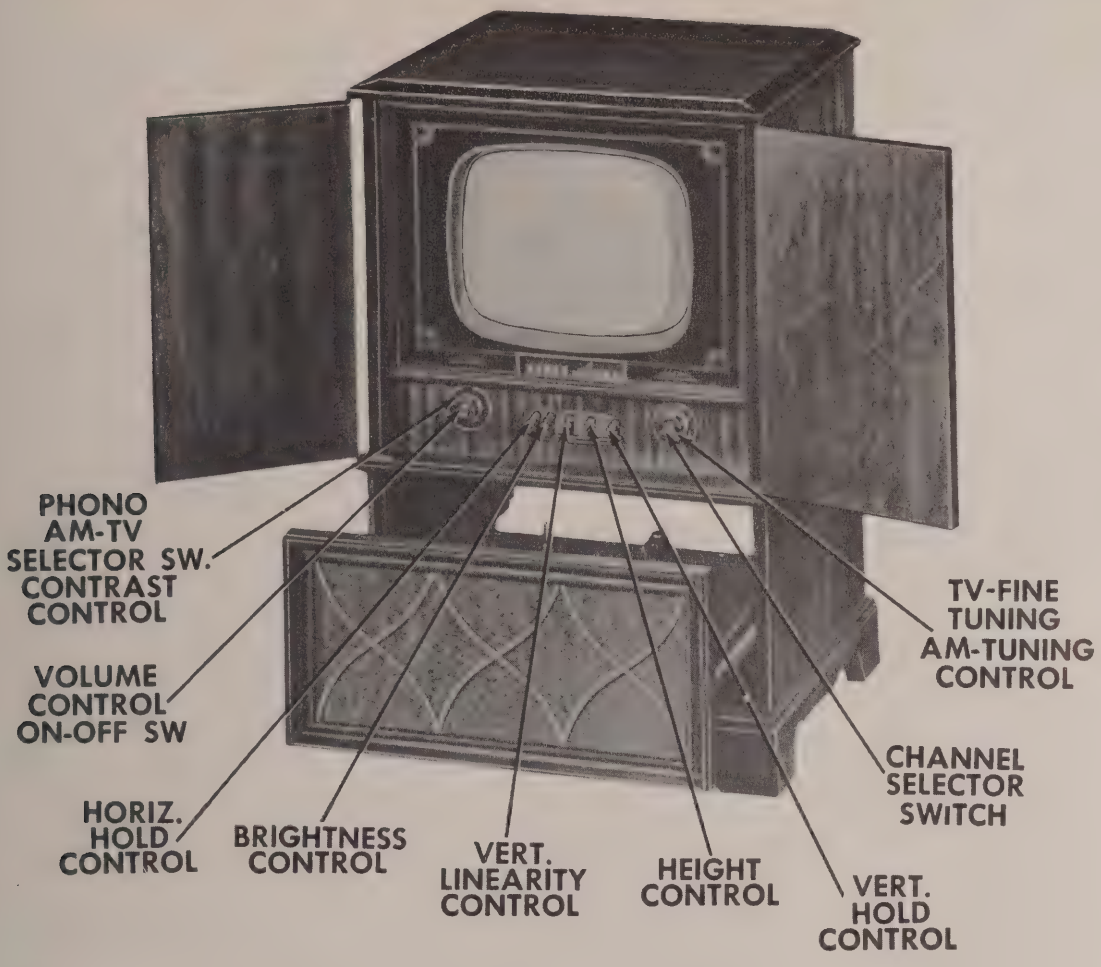

FIRESTONE
MODEL 13-G-57

TRADE NAME	Firestone Model 13-G-57
SUPPLIER	Firestone Tire and Rubber Co., 1200 Firestone Pkwy. Akron, Ohio
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty five
POWER SUPPLY	110-120 Volts AC-60Cycle
TUNING RANGE—(TV)	Channels 2 thru 13
(AM)	540-1600KC
RATING (TV)	2.2 Amp. at 117 Volts AC
(RADIO)	1.1 Amp. at 117 Volts AC

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FOR SERVICE INFORMATION ON RECORD CHANGER UNIT SEE VM MODEL 950 - PHOTOFACT SET # 107 FOLDER # 13 OR RECORD CHANGER MANUAL CM-3.

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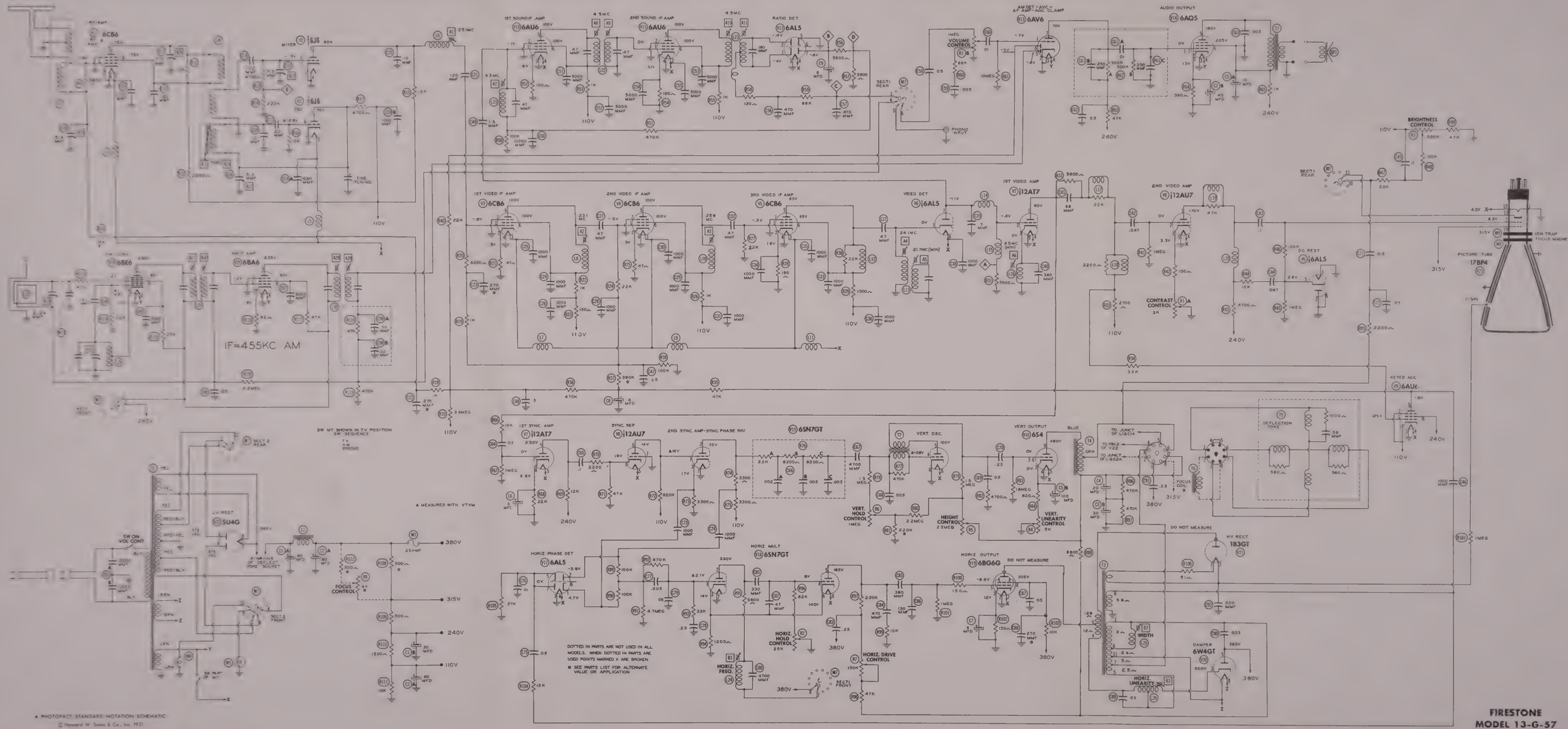
FIRESTONE
MODEL 13-G-57
IF=455KC AM
SW M7 SHOWN IN T-V POSITION
SW SEQUENCE
T-V
A-M
PHONO
A MEASURED WITH VTVM
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DO NOT MEASURE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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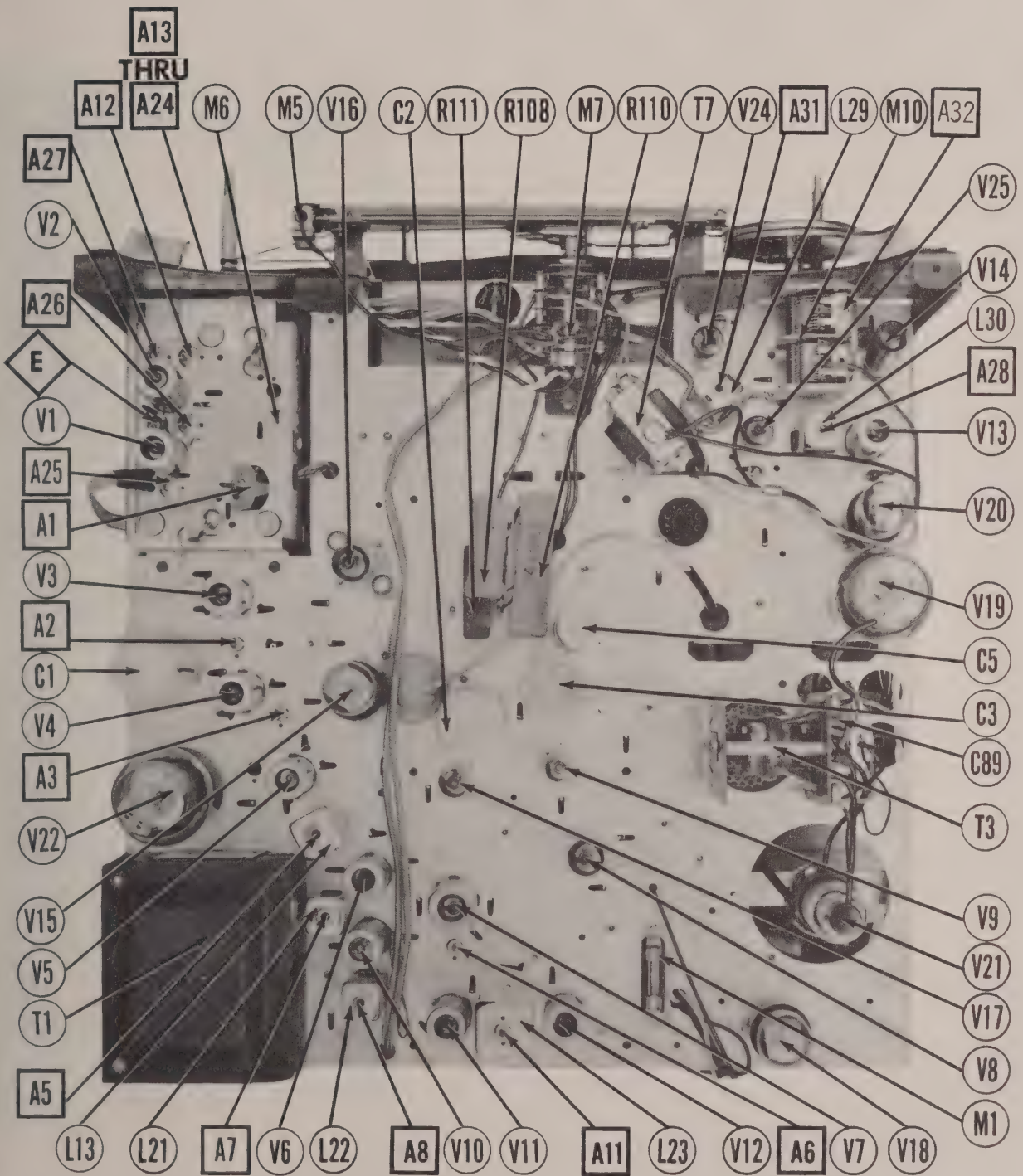
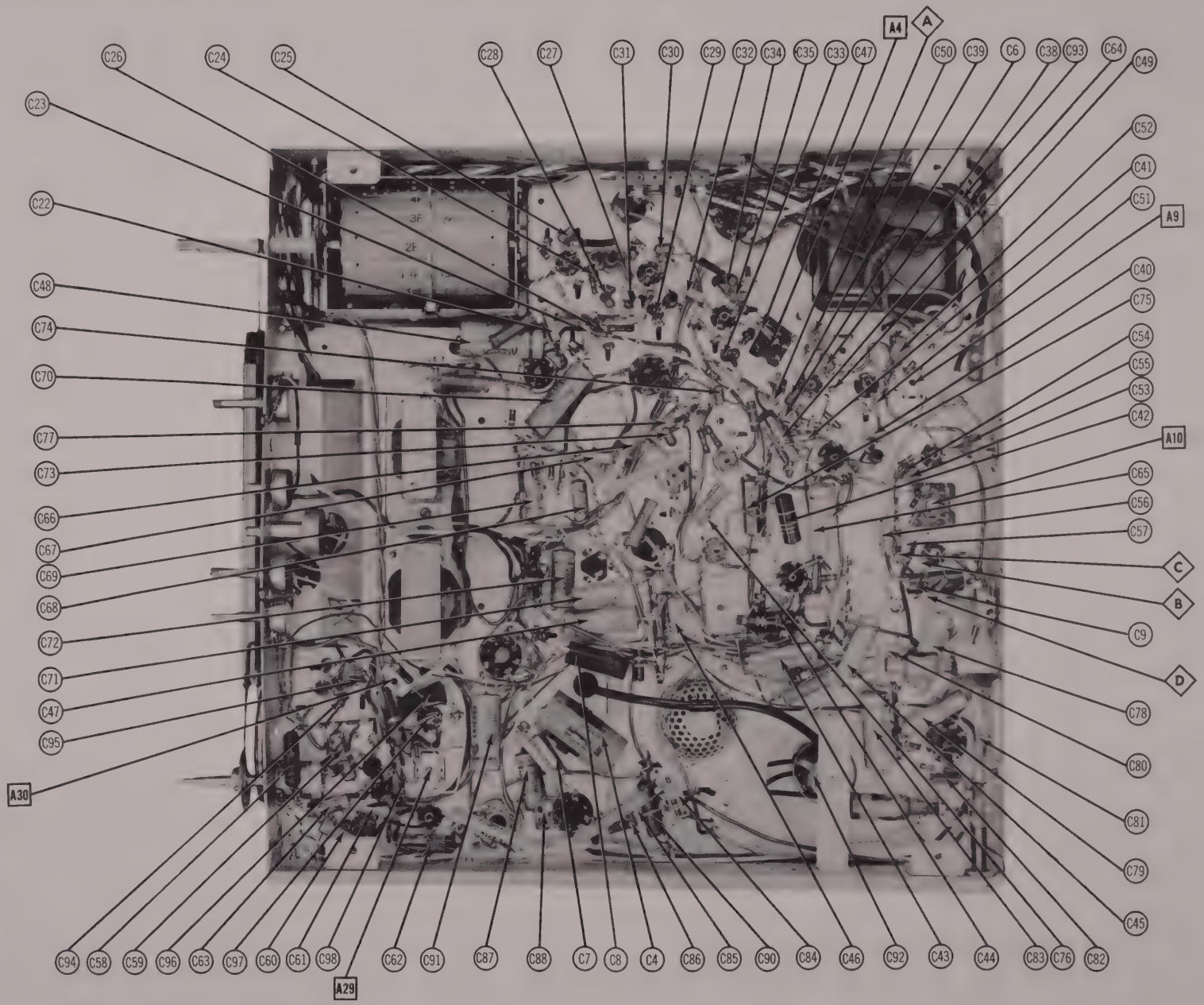
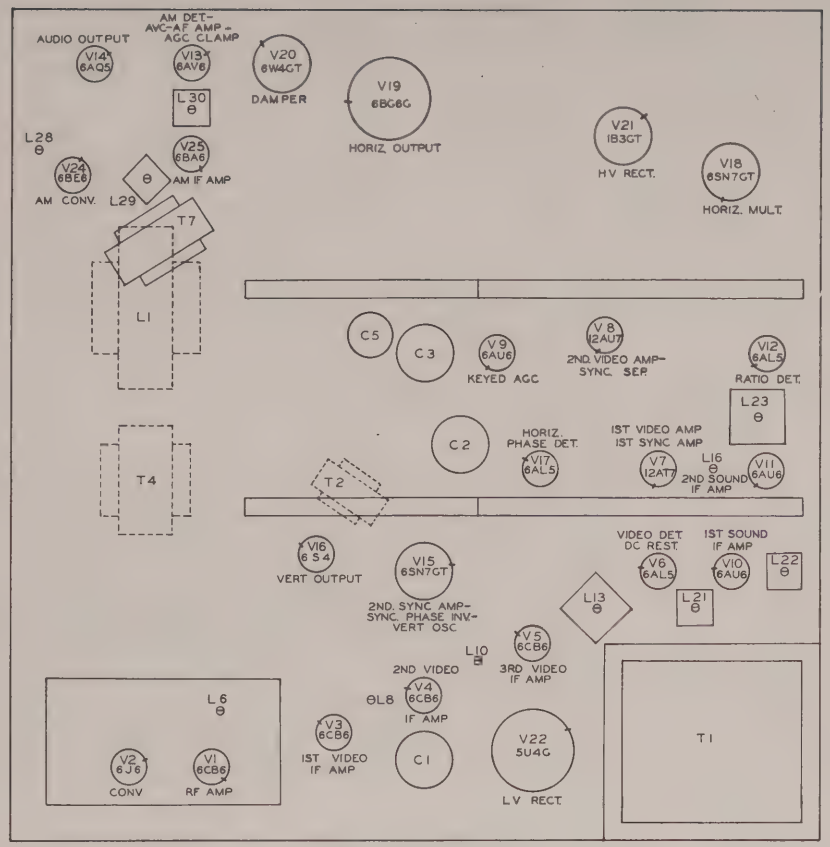
MODEL 13-G-57



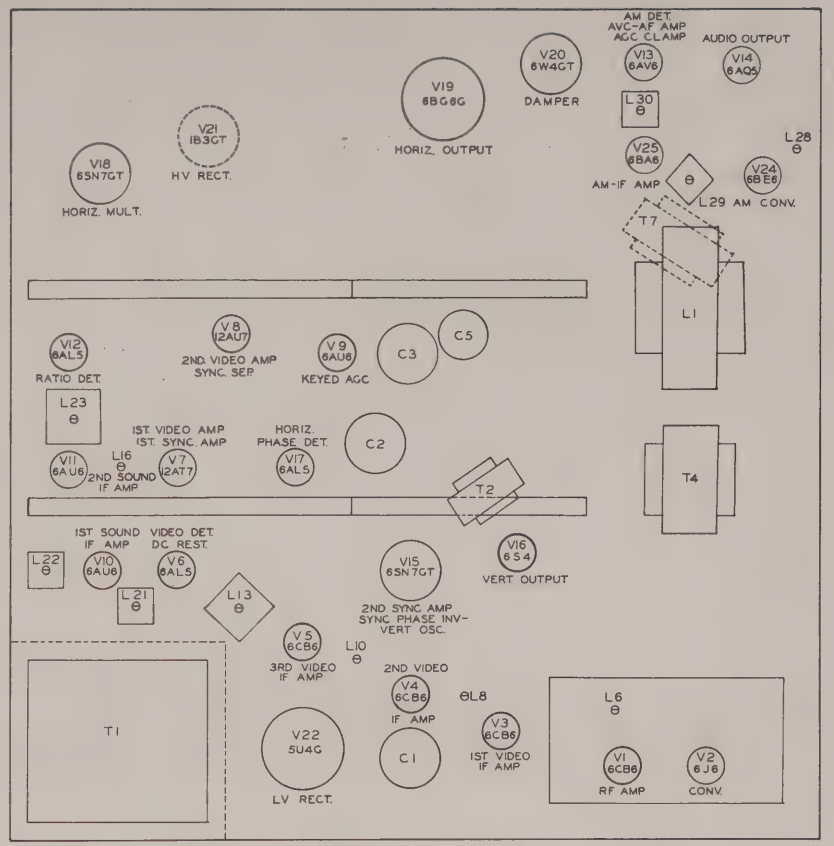
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.
Turn the function selector to TV.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C47, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.1MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain less than 2 volt reading.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	10KΩ carbon resistor	High side thru 10KΩ to pin 2 (plate) of 6AL5, (V6). Low side to chassis	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8, A9, A10	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to Point (C). Common to Point (D).	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8, A9, A10	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per figure 2.
9.	"	" "	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A11	Reconnect capacitor C9. Adjust A11 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A12. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted fro any individual channel. If adjustment of A12 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A13	Adjust to place video marker at 50% on response curve as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A14	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A15	
			195MC (10MC SWP)	193.25MC 195.75MC	10		A16	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A17	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A18	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A19	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A20	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A21	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A22	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A23	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A24	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across Antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209175MC	12	Vert. Amp. thru 10KΩ to Point (E). Low side to chassis.	A25, A26 A27	Adjust for response curve similar to figure 5 with markers above 90%.
12.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channel, make slight adjustment of A25, A26, and A27 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

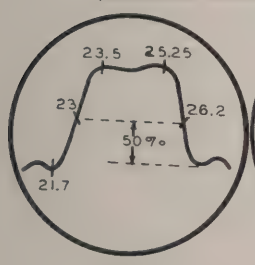


FIG.1

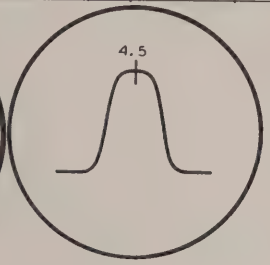


FIG. 2

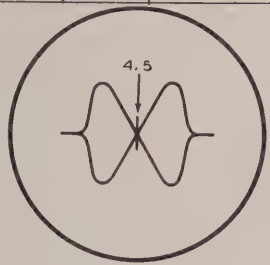


FIG. 3

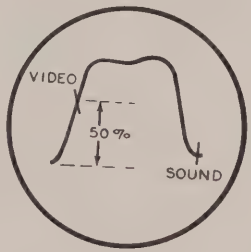


FIG. 4

FIG.5

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the function selector to AM.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD.	High side to pin 7, (Grid), of 6BE6, (V24). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open.	Across voice coil.	A28, A29 A30, A31	Adjust for maximum output.
14.	"	"	1620KC	"	"	"	A32	"
15.		Loop	1400KC	"	Tune for max. signal.	"	A33	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set pointer to 1400 on dial scale.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

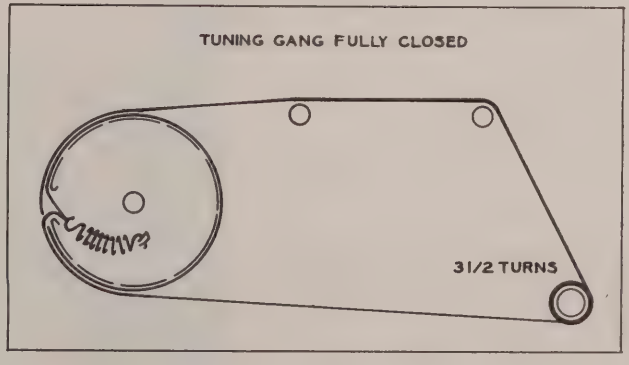
Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the width slug, (B2) until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DIAL CORD STRINGING

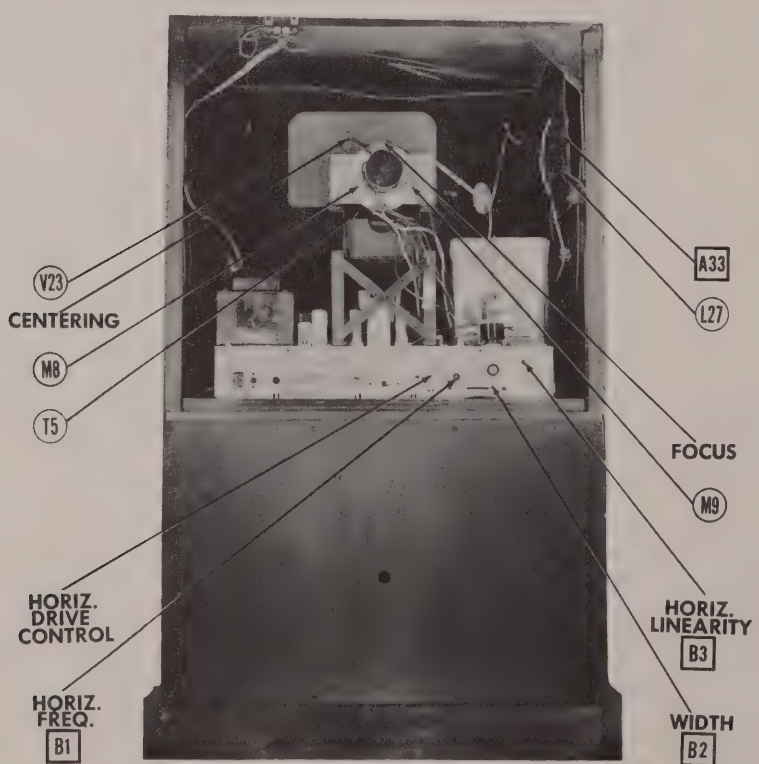


RESISTANCE MEASUREMENTS

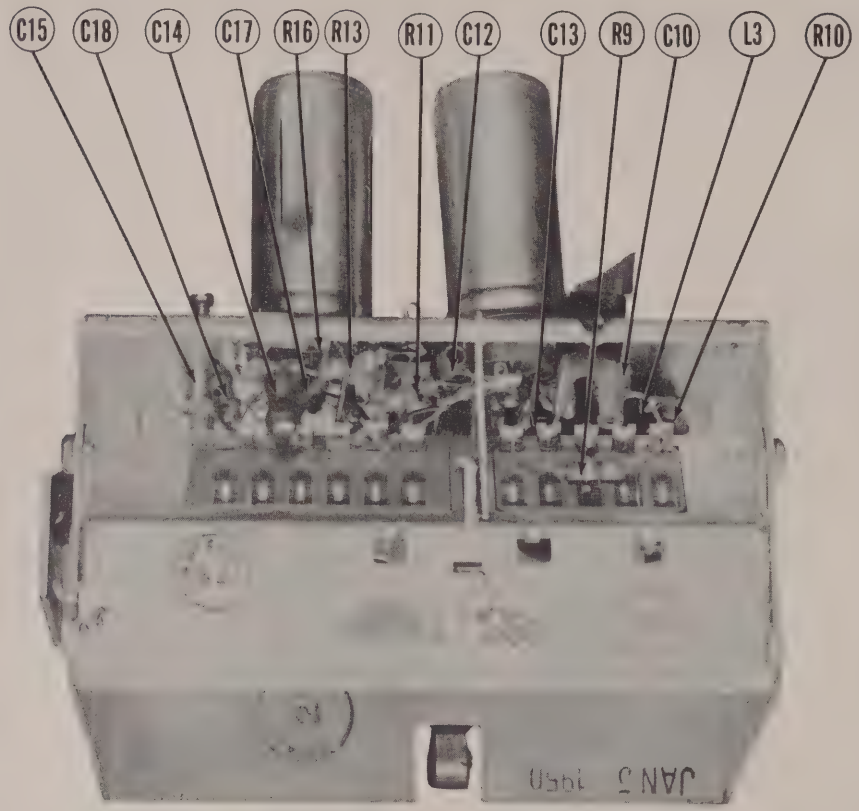
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	810KΩ	0Ω	.1Ω	0Ω	†4.7KΩ	†4.7KΩ	0Ω		
V 2	6J6	†7.2KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 4	6CB6	120KΩ	47Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 5	6CB6	22KΩ	180Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5.6KΩ		
V 7	12AT7	†11KΩ	5.6KΩ	.2Ω	.1Ω	.1Ω	†13KΩ	1Meg	22KΩ	0Ω
V 8	12AU7	†5.7KΩ	1Meg	295Ω	.1Ω	.1Ω	†820KΩ	0Ω	47KΩ	0Ω
V 9	6AU6	†36KΩ	†2.5KΩ	0Ω	.1Ω	550KΩ	†1KΩ	†2.5KΩ		
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	100Ω		
V 11	6AU6	2.4Ω	0Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	180Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	11.2KΩ		
V 13	6AV6	10Meg	0Ω	0Ω	.3Ω	515KΩ	800KΩ	†550KΩ		
V 14	6AQ5	500KΩ	390Ω	0Ω	.3Ω	†2.4KΩ	†2KΩ	500KΩ		
V 15	6SN7GT	†820KΩ	†9.1KΩ	3.3KΩ	1.9Meg	2.4Meg	0Ω	0Ω	.1Ω	
V 16	6S4	Inf.	1.3KΩ	1.8Meg	0Ω	.1Ω	1.8Meg	Inf.	Inf.	#7.8KΩ
V 17	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	27KΩ	Inf.	27KΩ		
V 18	6SN7GT	5.1Meg	†5.6KΩ	1.2KΩ	100KΩ	#400KΩ	1.2KΩ	0Ω	.1Ω	
V 19	6BG6G	Inf.	0Ω	150Ω	Inf.	1Meg	1Meg	.1Ω	†10KΩ	Top Cap #18Ω
V 20	6W4GT	Inf.	6.8KΩ	450KΩ	Inf.	†52Ω	12Ω	#8Ω	#8Ω	
V 21	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #140Ω
V 22	5U4G	Inf.	11KΩ	Inf.	22Ω	Inf.	20Ω	Inf.	11KΩ	
V 23	17BP4	0Ω	1.1Meg	PIN 10 †550Ω	PIN 11 †170KΩ	PIN 12 .1Ω				
V 24	6BE6	22KΩ	.4Ω	0Ω	.1Ω	▲†1KΩ	▲†28KΩ	2.6Meg		
V 25	6BA6	2.6Meg	0Ω	0Ω	.1Ω	▲†1KΩ	▲†47KΩ	82Ω		

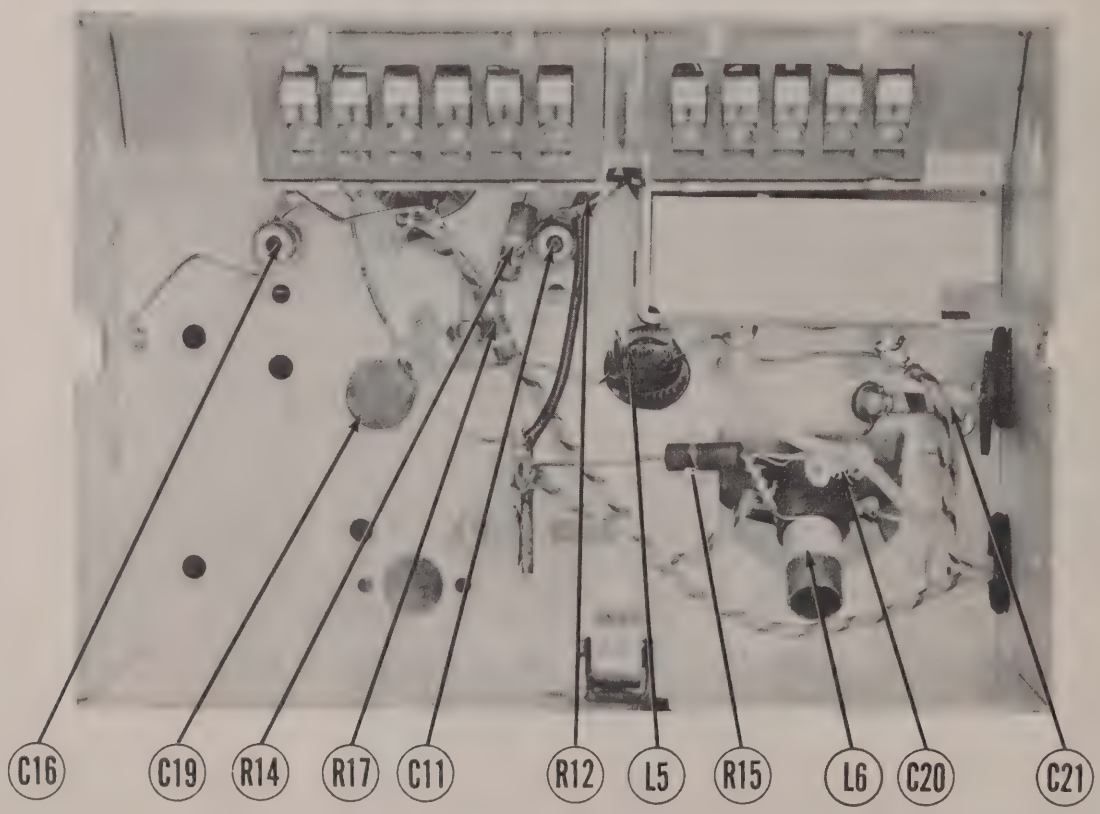
ALL CONTROLS SET FOR NORMAL OPERATION
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20
▲ MEASURED IN AM RADIO POSITION



CABINET-REAR VIEW



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	1st. Video Amp.-1st. Sync. Amp.	12AT7	12AT7	9A	
V8	2nd. Video Amp.-Sync. Separator	12AU7	12AU7	9A	
V9	Keyed AGC 6AU6	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AM Detector-AVC-AF Amplifier-AGC Clamp	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
	Sync. Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Vertical Output	6S4	6S4	9AC	
V17	Horizontal Phase Detector	6AL5	6AL5	6BT	
V18	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4	6W4	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V24	AM Converter	6BE6	6BE6	7CH	
V25	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	FIRESTONE PART No.	SYLVANIA PART No.	THOMAS PART No.		
V23	17BP4	17BP4	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Decoupling
C2A	80	450	45X384 ††	AFH2-91		UPT8045-V5		TVL-2710	▲ Filter
B	40	50							▲ Audio Output Cathode
C3A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Decoupling
B	30	450							▲ Vert. Output Dec.
C4	20	450	45X382	PRS450/20		BR2045A		TVA-1709	Vert. Output Dec.
C5A	10	450	45X385	AFH1-11		UPT2150-V10		TVL-1705	■ Audio Output Dec.
B	100	50						TVA-1310	▲ Vert. Output Cathode
C6	5	25	45X378	PRS150/4		BR550		TVA-1203	Sync. Amp. Cathode
C7	5	25	45X378	PRS150/4		BR550		TVA-1203	Horiz. Output Cathode
C8	4	100	45X361	PRS150/4		BR415		TVA-1402	AGC Filter
C9	5	25	45X378	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C10	3-9		31B-207		829-10				Variable Trimmer
C11	.5-3		31B-205		829-3				Variable Trimmer
C12	120		13D-045	SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Dec.
C13	1000		13D-047	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100		13D-046	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C15	.5-3		31B-205		829-3				Variable Trimmer
C16	.5-3		38B-206		829-3				Variable Trimmer
C17	20		13D-042	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C18	10		13D-064	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19A	1000		13D-071	BPD-2X001	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C20	10		13D-053	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C21	120		13B-033	SI120	D6-121		GP2K-121	5GA-T12	IF Coupling
C22	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	AGC Filter ¶
C23	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	AGC Filter ¶
C24	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Dec.
C25	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C26	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C27	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C28	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C29	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C30	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C31	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C32	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C33	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Dec.
C34	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Cathode
C35	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C36	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C37	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C38	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C39	5		47X562	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C40	360	500	47X568						Fixed Trimmer
C41	68		47X599		TCZ-68		NP0-333-680	5TCC-Q68	Video Coupling
C42	.047	400	D65503	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C43	.1	600	46X403	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C44	.047	400	D65503	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C45	.1	200	B65104	P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Cathode
C46	1000	500	47X569	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Feedback
C47	.25	200	B65254	P488-25		GT2P25		2TM-P25	AGC Filter
C48	.5	400	B65504	484-5		GT4P5		4TM-P5	AGC Filter
C49	1.5		47X584	SI1.5NP0	TCZ-1.5		NP0K-1R5		Sound IF Coupling
C50	10000		47X595	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. Sound IF Grid
C51	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Dec.
C52	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	5000		47X507	BPD-005	DD-502	1DSD5	811-005	5HK-D5	2nd. Sound IF Dec.
C54	5000		47X507	BPD-005	DD-502	1DSD5	811-005	5HK-D5	2nd. Sound IF Cathode
C55	5000		47X507	BPD-005	DD-503	1DSD5	811-005	5HK-D5	2nd. Sound IF Fil.
C56	470	500	47X525	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	RF Bypass
C57	470	500	47X525	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	De-emphasis
C58	.05	200	B65503	P388-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C59	.005	600	B65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C60	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C61A	.01								Audio Coupling
B	250		♦76X5			♦PC-80			Audio Coupling
C									AF Amp. Plate
									Audio Output Grid
C62	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C63	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C64	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C65	.1	400	D65104	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C66A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		♦76X7	P688-005	♦PC-100	PTE6D5	GP2-333-502		Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C67	4700	500	47X543	1464-005		1DR5D4		MS-25	Vert. Osc. Grid Cap.
C68	.005	200	B65503	P688-005	D6-503	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid Cap.
C69	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C70	.25	400	D65254	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C71	.015	600	F65153	P488-015		PTE6S15		6TM-S15	Vert. Sweep Coupling
C72	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Net.
C73	1000		47X519	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C74	1000		47X519	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C75	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Feedback
C76	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Voltage Divider
C77	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C78	.25	200	B65254	P488-25		GT4P25		2TM-P25	AFC Filter
C79	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. MV Grid
C80	4700	500	47X543	1464-005		1DR5D5		MS-25	Fixed Trimmer
C81	330	500	47X570	1469-00035					Horiz. MV Feedback
C82	47	500	47X565	1469-00005		5R5Q5		MS-45	Horiz. MV Grid
C83	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. MV Dec.
C84	470	500	47X525	1469-0005		5R5T5		MS-35	Horiz. Discharge
C85	390	500	47X571	1468-0004	D6-391	5W5T4	GP2K-391	1FM-34	Horiz. Sweep Coupling
C86	130	500	RCM20A131K	1469-00015		5R5T15			Voltage Divider
C87	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C88	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Output Screen ¶
C89	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Fixed Trimmer
C90	.03	400	D65303	P488-03		PTE6S3		6TM-S3	Horiz. Sweep Coupling
C91	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C92	500	20000	47X560	HV20-C	TV3-502				HV Filter
C93A	10000		††76X8	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	Line Filter
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Line Filter
C94	47		47X498	SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	AM Osc. Grid Cap.
C95	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AM Osc. Anode
C96	.05	200	D65503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C97	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	IF Amp. Screen
C98A	50			SI50		5W5Q5	GP1K-500		Diode RF Filter
B	50		††76X1	SI50		††PC-52 ♦	5W5Q5	GP1K-500	††100C1 Diode RF Filter

¶ Some models use 1000MMF in this application. (Part # 47X519)
♦ Items C66A, C66B, C66C, R76A, R76B, R76C are combined in one unit.
† Items C98A, C98B, R118 are combined in one unit.
†† Items C61A, C61B, C61C, R62A, R62B are combined in one unit. When replacing with separate units, C61B and C61C should total 350MMF.
In late productions, this capacitor may be 80MFD at 450V and 100MFD at 50V.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	3000Ω	½		B11-112 *			Contrast Control - Front
B	1Meg	½	78X7	B13-137X *	RTV-218		Volume Control and Switch, Tapped at 200 KΩ - Rear
C	Shaft end			E-187 *			Attach per instructions in "Concentrikit"
D	Switch			76-1 *			Attach per instructions in "Concentrikit"
R2A	25KΩ	½	40X330	Q11-120	AG-40-S	B-26	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R2A per instructions
R3A	500KΩ	½	40X290	Q11-133	AG-58-S	B-59	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R3A per instructions
R4A	5000Ω	½	40X294	Q11-114	AM-19-S		Vert. Linearity Control
B	Shaft		Not req.	PQ ¶	RS-2 ¶		Attach to R4A per instructions
C	Bushing		Not req.	S3	59-186		Attach to R4A per instructions
R5A	2.5Meg	½	40X293	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	SQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	1Meg	½	40X291	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R6A per instructions
R7A	150KΩ	½	40X331	Q11-130 ♯	AG-52-S		Horiz. Drive Control
B	Shaft		Not req.	Not req.	FKS-1/4		Attach to R7A per instructions
R8	4000Ω	4	40X304				Focus Control - Wire Wound - See Note

* Additional parts to be used with "Concentrikit"
¶ Fashion Shaft to duplicate original
♯ Shunt control terminals with IRC, BTS-390KΩ resistor
Note : R8 is not used in models employing a PM focus magnet.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω	½	12A-046	BTS-3900	Antenna Coil Shunt
R10	75KΩ	½			AGC Network - See Note 1
R11	10KΩ	½	12A-040		RF Coil Shunt
R12	2200Ω	½	12A-049	BTS-2200	RF Amp. Decoupling
R13	4700Ω	½	12A-042	BTS-4700	Mixer Grid
R14	220KΩ	½	12A-041		Mixer Grid
R15	15KΩ	½	12A-021		Mixer Plate
R16	10KΩ	½	12A-040		Osc. Grid
R17	4700Ω	½	12A-042	BTS-4700	Osc. Plate
R18	1000Ω 20%	½	B85102	BTS-1000	AGC Network
R19	1000Ω 20%	½	B85102	BTS-1000	AGC Network
R20	8200Ω 5%	½	B83822		1st. Video IF Amp. Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R21	47Ω 5%	½	B83470		1st. Video IF Amp. Cathode
R22	1000Ω 20%	½	B85102	BTS-1000	1st. Video IF Amp. Decoupling
R23	150Ω	½	B84151	BTS-150	1st. Video IF Amp. Decoupling
R24	22KΩ	½	B83223		2nd. Video IF Amp. Grid
R25	47Ω 5%	½	B83470		2nd. Video IF Amp. Cathode
R26	1000Ω	½	B85102	BTS-1000	2nd. Video IF Amp. Decoupling
R27	22KΩ	½	B84223		3rd. Video IF Amp. Grid
R28	180Ω	½	B84181	BTS-180	3rd. Video IF Amp. Cathode
R29	1500Ω	½	B85152	BTS-1500	3rd. Video IF Amp. Decoupling
R30	22KΩ	½	B84223		3rd. Video IF Amp. Plate Coil Shunt
R31	5600Ω 5%	½	B83562	BTS-5600 5%	Video Det. Diode Load
R32	5600Ω	1	C84562	BTA-5600	1st. Video Amp. Plate
R33	2700Ω 5%	1	C83272	BTA-2700 5%	Voltage Divider
R34	33KΩ	½	B84333	BTS-33K	AGC Keying Grid
R35	47KΩ 20%	½	B84473	BTS-47K	AGC Keying Plate
R36	470KΩ 20%	½	B84474	BTS-470K	AGC Keying Plate
R37	390KΩ	½	B84394	BTS-390K	AGC Network - See Note 2
R38	100KΩ	½	B84104	BTS-100K	AGC Network
R39	3.9Meg	½	B84395	BTS-3.9Meg	Voltage Divider
R40	22KΩ	½	B84223	BTS-22K	AGC Network
R41	1Meg	½	B85105	BTS-1Meg	2nd. Video Amp. Grid
R42	100Ω	½	B84101	BTS-100	2nd. Video Amp. Cathode
R43	4700Ω 5%	1	C83472	BTA-4700 5%	2nd. Video Amp. Plate
R44	10KΩ	½	B84103	BTS-10K	Isolation
R45	1Meg	½	B85105	BTS-1Meg	DC Rest. Diode Load
R46	100KΩ 20%	½	B85104	BTS-100K	Picture Tube Grid
R47	22KΩ 20%	½	B84223	BTS-22K	Picture Tube Cathode
R48	100KΩ	½	B84104	BTS-100K	Picture Tube Cathode
R49	47KΩ 20%	½	B85473	BTS-47K	Voltage Divider
R50	100KΩ	½	B84104	BTS-100K	AVC Network
R51	470KΩ 20%	½	B84474	BTS-470K	AVC Network
R52	100Ω	½	B84101	BTS-100	1st. Sound IF Amp. Cathode
R53	1000Ω 20%	½	B85102	BTS-1000	1st. Sound IF Amp. Decoupling
R54	180Ω 20%	½	B84181	BTS-180	2nd. Sound IF Amp. Cathode
R55	1000Ω 20%	½	B85102	BTS-1000	2nd. Sound IF Amp. Decoupling
R56	5600Ω	½	B83562	BTS-5600	Ratio Det. Diode Load
R57	5600Ω	½	B83562	BTS-5600	Ratio Det. Diode Load
R58	120Ω	½	B84121	BTS-120	Balancing
R59	68KΩ	½	B84683	BTS-68K	De-emphasis
R60	68KΩ	½	B84683	BTS-68K	Tone Compensation
R61	10Meg	½	B85106	BTS-10Meg	AF Amp. Grid
R62A	500KΩ	½	♦76X5 ♦		AF Amp. Plate
B	500KΩ	½			Audio Output Grid
R63	47KΩ 20%	½	B84473	BTS-47K	AF Amp. Decoupling
R64	390Ω	1	C84391	BTA-390	Audio Output Cathode
R65	1000Ω	2	D84102	BTB-1000	Audio Output Decoupling
R66	10KΩ	½	B84103	BTS-10K	Isolation
R67	1Meg	½	B85105	BTS-1Meg	1st. Sync. Amp. Grid
R68	22KΩ	½	B84223	BTS-22K	1st. Sync. Amp. Cathode
R69	12KΩ	½	B84123	BTS-12K	1st. Sync. Amp. Plate
R70	2200Ω	½	B84222	BTS-2200	Phase Correction
R71	47KΩ	½	B84473	BTS-47K	Sync. Sep. Cathode
R72	820KΩ	½	B84824	BTS-820K	Sync. Sep. Plate
R73	3300Ω 5%	½	B83332	BTS-3300 5%	2nd. Sync. Amp. Cathode
R74	3300Ω	½	B84332	BTS-3300	2nd. Sync. Amp. Plate
R75	3300Ω 5%	½	B83332	BTS-3300 5%	2nd. Sync. Amp. Plate
R76A	22KΩ	½			Integrator Network
B	8200Ω	½	♦76X7 ♦		Integrator Network
C	8200Ω	½			Integrator Network
R77	470KΩ	½	B84474	BTS-470K	Vert. Osc. Transformer Shunt
R78	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Grid
R79	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Plate
R80	2.2Meg 20%	½	B85225	BTS-2.2Meg	Voltage Divider
R81	220KΩ 20%	½	B85224	BTS-220K	Voltage Divider - See Note 3
R82	4700Ω	½	B84472	BTS-4700	Vert. Peaking
R83	1.8Meg	½	B84185	BTS-1.8Meg	Vert. Output Grid
R84	820Ω	½	B84821	BTS-820	Vert. Output Cathode
R85	2200Ω 20%	½	B85222	BTS-2200	Vert. Retrace Blanking Network
R86	470KΩ	½	B84474	BTS-470K	Voltage Divider
R87	470KΩ	½	B84474	BTS-470K	Voltage Divider
R88	6800Ω	5	43X266		Decoupling - Wire Wound
R89	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Load
R90	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Load
R91	4.7Meg 20%	½	B85475	BTS-4.7Meg	Horiz. Phase Det. Load
R92	470KΩ 20%	½	B85474	BTS-470K	Horiz. AFC Filter
R93	33KΩ	½	B84333	BTS-33K	Horiz. AFC Filter
R94	1200Ω	½	B84122	BTS-1200	Horiz. Mult. Cathode
R95	56000Ω	½	B84562	BTS-5600	Horiz. Mult Plate
R96	82KΩ	½	B84823	BTS-82K	Horiz. Mult. Grid
R97	220KΩ 20%	½	B85224	BTS-220K	Horiz. Mult. Plate
R98	47KΩ	½	B84473	BTS-47K	Horiz. Mult. Plate Decoupling
R99	10KΩ	½	B84103	BTS-10K	Horiz. Peaking
R100	150Ω	½	B84151		Parasitic Suppressor
R101	1Meg	½	B84105	BTS-1Meg	Horiz. Output Grid
R102	150Ω	5	43X263	1 3/4A-150	Horiz. Output Cathode - Wire Wound
R103	10KΩ	5	43X247	1 4/4A-10K	Horiz. Output Screen - Wire Wound
R104	15KΩ	1	C84153	BTA-15K	Horiz. Feedback Network
R105	27KΩ	½	B84273	BTS-27K	Horiz. Feedback Network
R106	5.1Ω	2	43X239		HV Rect. Filament - Wire Wound
R107	1Meg	½	C85105		HV Filter
R108	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound - See Note 4
R109	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound
R110	1500Ω	15	43X261	2D-1500	Filter Network - Wire Wound
R111	10KΩ	10	43X267	1 3/4A-10K	Bleeder - Wire Wound
R112	500Ω	5	43X257	1 3/4A-500	Focus Coil Shunt - Wire Wound - See Note 4
R113	47Ω	½	B85470		Parasitic Suppressor
R114	22KΩ	½	B84223	BTS-22K	Osc. Grid
R115	27KΩ	2	D84273	BTB-27K	Osc. Anode
R116	82Ω	½	B84820	BTS-82	AM IF Amp. Cathode
R117	47KΩ	1	C84473	BTA-47K	AM IF Amp. Screen
R118	47KΩ	½	76X1 †	BTS-47K	Diode RF Filter
R119	470KΩ	½	B84474	BTS-470K	AM Det. Diode Load
R120	2.2Meg	½	B85225	BTS-2.2Meg	AVC Network

♦ Items R62A, R62B, C61A, C61B and C61C are combined into one unit.
♦ Items R76A, R76B, R76C, C66A, C66B and C66C are combined into one unit.
† Items R118, C98A and C98B are combined into one unit.
Note 1 Some models use a 47KΩ resistor in this application.
Note 2 Some models use a 430KΩ resistor in this application.
Note 3 Some models use a 180KΩ resistor in this application.
Note 4 Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑥ 2.2A	720VCT .250ADC	550VCT .075ADC	5VAC ③ 3A SEC. 4 6.3VAC ④ 1.2A SEC. 5 6.3VAC ⑤ 8.6A	53X323			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.15KΩ	54X7	A-8122 ①	A-3000 ①	TBO-2 ①	Vert. Block Osc. Trans.
T3	140Ω Tap 12Ω	10.6Ω Taps ③ .3Ω, 3.1Ω and 8.1Ω SEC. 2 5.6Ω SEC. 3 0Ω	53X320		HVO-7 and MWC-1		Horiz. Output Trans.
T4	1KΩ Tap 12Ω		51X151	A-8112	A-3037 ①	TSO-5 ①	Vert. Output Trans.
T5A	19Ω		9A2195	DY-7	MDF-70		Horiz. Deflection Coils
B	53Ω						Vert. Deflection Coils
T6			9A2162 ②				Focus Coil

① Drill one new mounting hole.
② Not used in all models, PM type listed under misc. column.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.7KΩ	3.7Ω	400Ω	.6Ω	51X154	A-3877	A-2930	RO-9	

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.7Ω	12A505	ST15 Model P8-V	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	52Ω	2 Henries	52X88	C-2326	C-2991	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	9A2119	Channel #2 - Part of Tuner # 25A1087
L3	Fil. Choke	0Ω			Part of Tuner # 25A1087
L4	RF, Mixer Grid and Osc. Coil	0Ω		9A2131	Channel # 2-Part of Tuner # 25A1087
L5	Fil. Choke	0Ω			Part of Tuner # 25A1087
L6	1st. Video IF	.7Ω		31A-095	
L7	Fil. Choke	0Ω		9A2033	
L8	2nd. Video IF	.2Ω		9A2225	
L9	Fil. Choke	0Ω		9A2033	
L10	3rd. Video IF	.2Ω		9A2225	
L11	Fil. Choke	0Ω		9A2033	
L12	Plate Choke	2.5Ω		9A1979	
L13	4th. Video IF	.2Ω	0Ω	9A2226	
L14	Peaking	10Ω		36A1	100 Microhenries (yellow dot)
L15	Peaking	30Ω		36A5	750 Microhenries (green dot)
L16	4.5MC Trap	.2Ω		9A2074	
L17	Peaking	14Ω		36A7	190 Microhenries wound on 22KΩ resistor (orgnge dot)
L18	Peaking	15Ω		36A4	215 Microhenries wound on 2.2KΩ resistor (red dot)
L19	Peaking	13Ω		36A8	185 Microhenries on 47KΩ resistor (brown dot)
L20	Peaking	14Ω		36A2	190 Microhenries (white dot)
L21	Sound Takeoff	2.8Ω		9A2168	
L22	Sound IF	2.4Ω	2.4Ω	9A2170	
L23	Ratio Det. Trans.	2.8Ω	.3Ω	9A2171	Tap .8Ω
L24	Horiz. Osc.	45Ω		9A2096	
L25	Width Coil	.5Ω		9A2183	
L26	Horiz. Lin.	5.5Ω		9A2172	Tap 1.6Ω
L27	AM Loop Ant.	.9Ω	.1Ω	9A2224	
L28	AM Osc. Coil	5.5Ω	.4Ω	9A2223	
L29	1st. AM IF	16Ω	17Ω	9A2108	
L30	2nd. AM IF	9Ω	9Ω	9A2042	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			FIRESTONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250A	16X147	16X146	313.250	357001	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	FIRESTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	P-81	AC-AG-J	A-AG	W26B	A66U	33	O-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

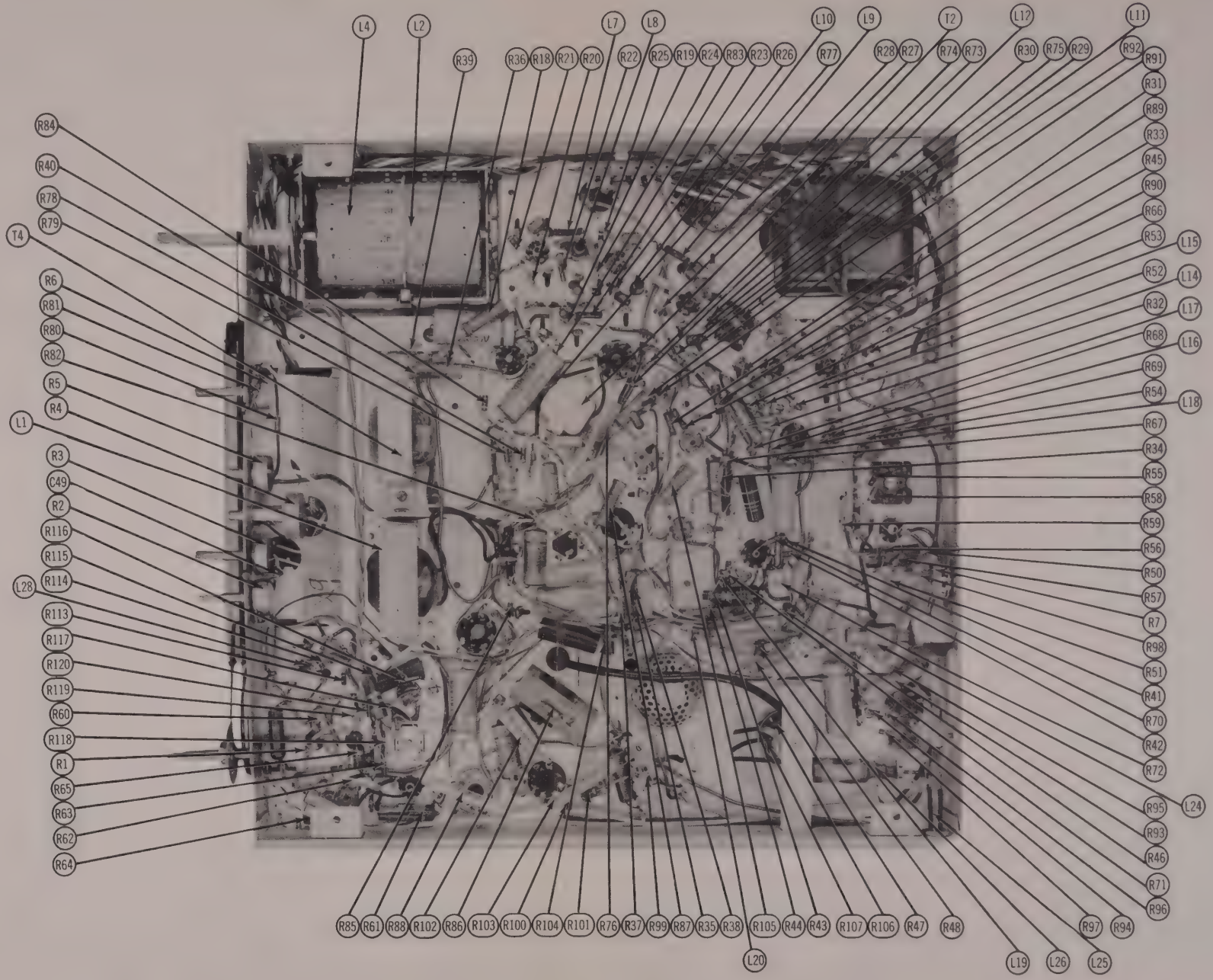
ITEM No.	REPLACEMENT DATA		REMARKS
	FIRESTONE PART No.	WALCO PART No.	
M3	85-35	W-30AGA	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M4	Bayonet	7.5	.2	White	7A32		Type # 51
M5	Bayonet	6-8	.15	Brown	7A103		Type # 47

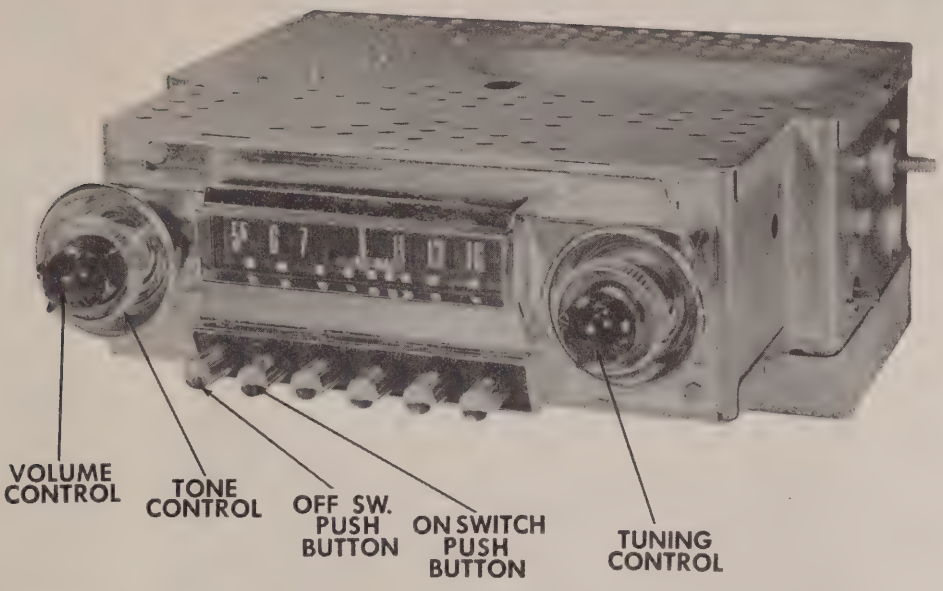
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M6	RF Tuner	25A1087	
M7	Switch	2A418	Function (Phono-AM-TV)
M8	Focus Magnet	2A410	
M9	Ion Trap	2A407	
M10	Tuning Cap	14A216	For Am Radio (19-452MMF, 36 - 186MMF)
A33	Trimmer	17A235	2-24MMF Am Loop Ant.
	Knob	10A742	Fine Tuning
	Knob	10A741	Channel Selector (Mahogany Cabinet)
	Knob	10A752	Contrast
	Knob	10A794	Volume Off/On
	Knob	10A768	Fine Tuning
	Knob	10A769	Channel Selector (Oak Cabinet)
	Knob	10A770	Contrast
	Knob	10A800	Volume Off/On
	Ant. Coil	9A2120	Channel # 3
		9A2121	Channel # 4
		9A2122	Channel # 5
		9A2123	Channel # 6
		9A2124	Channel # 7
		9A2125	Channel # 8
		9A2126	Channel # 9
		9A2127	Channel # 10
		9A2128	Channel # 11
		9A2129	Channel # 12
		9A2130	Channel # 13
	RF, Mixer Grid and Osc.	9A2132	Channel # 3
		9A2133	Channel # 4
		9A2134	Channel # 5
		9A2135	Channel # 6
		9A2136	Channel # 7
		9A2137	Channel # 8
		9A2138	Channel # 9
		9A2139	Channel # 10
		9A2140	Channel # 11
		9A2141	Channel # 12
		9A2142	Channel # 13



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

FORD MODELS 1CF743-1 (1A-18805-B), 1CH748-1 (1H-18805), 1CM747-1 (1M-18805)



TRADE NAME	Ford Model 1CF743-1 (1A-18805-B), Lincoln Model 1CH748-1 (1H-18805), Mercury Model 1CM747-1(1M-18805)
MANUFACTURER	Ford Motor Co., Inc., Detroit, Mich.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES(Eight)	Types 6SK7GT RF Amp., 6SA7GT IF Amp., 6SK7GT IF Amp., 6SQ7GT Det.-AF Amp. 6J5GT Phase Inv. (2) 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery RATING 7.8Amp @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1610 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8, (grid), of 6SA7, (V2). Low side to chassis.	265KC (400~mod)	Tuning cores fully out. (High freq. end)	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	Fig. 1.	High side thru dummy to ant. receptacle. Low side to chassis.	1625KC	"	"	A5, A6 A7	"
	The following should be performed only after a coil or core has been replaced or tampered with.						
3.	Fig. 1.	High side thru dummy to ant. receptacle. Low side to chassis.	1625KC	High freq. end. Screw cores completely out of coils.	Across voice coil.	A5, A6, A7.	If necessary adjust pointer to 1610KC. Adjust for maximum output.
4.	"	"	1410KC	"	"	A8, A9, A10	Replace cores to approx. 11/16 in. from end of coil. Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be made.

In the event that the sensitivity control has been tampered with, connect a voltmeter to pin 5 of V3 and adjust R2 until meter reads 3.5 volts.
After set is installed, fully extend the antenna and tune in a weak station near 1400KC. Adjust for maximum volume.

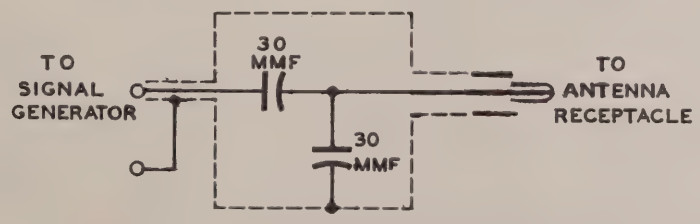


FIG. 1

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"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		FORD PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	622-0001H	6SK7GT	8N	
V2	Converter	622-0002H	6SA7GT	8R	
V3	IF Amplifier	622-0001H	6SK7GT	8N	
V4	Det. -AVC-AF Amp.	622-0003H	6SQ7GT	8Q	
V5	Phase Inverter	622-0010H	6J5GT	6Q	
V6	Audio Output	622-0004H	6V6GT	7AC	
V7	Audio Output	622-0004H	6V6GT	7AC	
V8	Rectifier	633-0001H	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	FORD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	350		AFH3-120		UP2235C		TVL-3678	■ Filter
B	20	350							▲ Filter
C	20	25							Output Cathode
C2	10000		168-0002D	BPD-01	DD-103	1D3S1	821-01	5HK-S1	RF Coupling †
C3	150	500	164-0150	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	AVC Filter ‡
C4	.022	200	160-02122	P488-022	DF-203	PTE4S2		4TM-S22	AVC Filter
C5	.1	400	160-0401	P488-1	DF-104	PTE4P1		4TM-P1	RF Amp. Screen
C6	33	500	163-0033		D6-330		GP1K-330		RF Coupling
C7	10	500	164-0010	1469-00001		5R5Q1		MS-41	Fixed Trimmer
C8	230		165-0230						Fixed Trimmer
C9	.1	200	160-0201	P288-1	DF-104	PTE4P1		2TM-P1	IF Amp. Cathode
C10	250	500	163-0250	1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Tone Comp.
C11	250	500	163-0250	1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Tone Comp.
C12	.0022	400	160-04222	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Tone Comp.
C13	.0015	400	160-04215	P688-0015	D6-152		GP2L-152	6TM-D15	Tone Comp.
C14	.0056	400	160-02256		D6-502		GP2-333-562		Audio Coupling
C15	220	500	163-0220	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C16	.022	600	160-06122	P688-022	DF-203	PTE6S2		6TM-S22	Audio Coupling
C17	.022	600	160-06122	P688-022	DF-203	PTE6S2		6TM-S22	Audio Coupling
C18	.0082	1600	160-16282			PTE16D8		MB-D8	Buffer Cap.
C19	.5	100	169-0001	P185-5		GT2P5		68P20	Hash Filter
C20	250	500	163-0250	1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Hash Filter *

* Not used in all models.
† Some models use 5000MMF in this application (Part No. 166-5000D)
‡ Some models use 100MMF in this application (Part No. 164-0100)

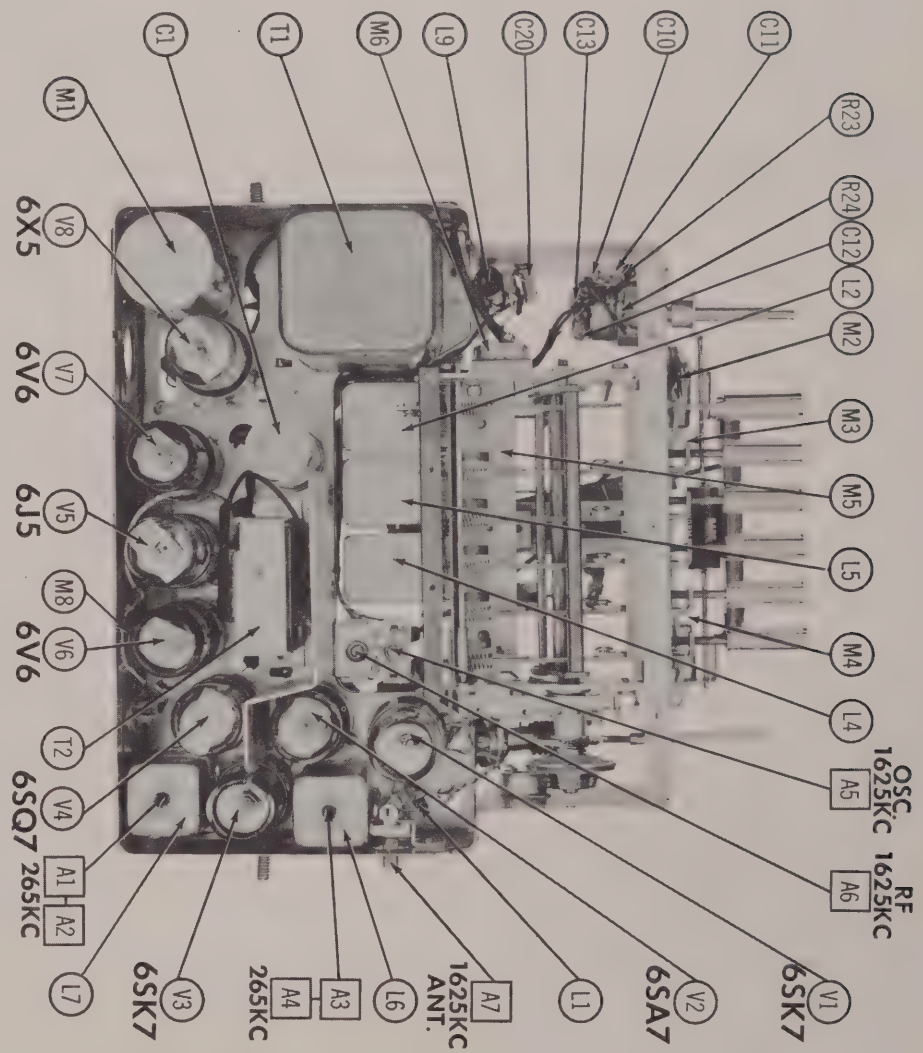
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	FORD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Switch		152-008				Tone Switch-4 position-Panel
B	1Meg	½					Volume Control- Tapped @ 500K
R2	2000Ω	1	159-004				Sensitivity Control-Wire Wound (100Ω Stop)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	FORD PART No.	IRC PART No.	
R3	1Meg	½	181-0105	BTS-1Meg	RF Amplifier Grid
R4	10KΩ	1	182-0103	BTA-10K	RF Amplifier Plate
R5	330KΩ	½	181-0334	BTS-330K	Converter Grid
R6	22KΩ	½	181-0223	BTS-22K	Oscillator Grid
R7	10Meg	½	181-0106	BTS-10Meg	AVC Network
R8	33KΩ	½	181-0333	BTS-33K	Voltage Divider
R9	10KΩ	1	182-0103	BTA-10K	Screen Dropping
R10	1Meg	½	181-0105	BTS-1Meg	AVC Network
R11	470KΩ	½	181-0474	BTS-470K	Diode Load
R12	220KΩ	½	181-0224	BTS-220K	Diode RF Filter
R13	15Meg	½	181-0156	BTS-15Meg	AF Amplifier Grid
R14	47Ω	½	181-0470		AF Amplifier Cathode
R15	330KΩ	½	181-0334	BTS-330K	AF Amplifier Plate
R16	56KΩ	½	181-0563	BTS-56K	Phase Inverter Grid
R17	2200Ω	½	181-0222	BTS-2200	Phase Inverter Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	FORD PART No.	IRC PART No.	
R18	1500Ω	½	181-0152	BTS-1500	Feedback
R19	39KΩ	½	181-0393	BTS-39K	Phase Inverter Plate
R20	330KΩ	½	181-0334	BTS-330K	Output Grid
R21	330Ω	1	182-0331	BTA-330	Output Cathode
R22	33KΩ	½	181-0333	BTS-33K	Output Grid
R23	100KΩ	½	181-0104	BTS-100K	Tone Compensation
R24	100KΩ	½	181-0104	BTS-100K	Tone Compensation
R25	1800Ω	2	183-0182	BW-1-1800	Filter Wire-Wound
R26	82Ω	½	181-0820		Hash Suppressor
R27	82Ω	½	181-0820		Hash Suppressor
R28	330Ω	½			Phase Inv. Filament

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	FORD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 3.8A	530VCT .060 ADC			141-0010			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FORD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8KΩ C.T.	3.4Ω	430Ω C.T.	.3Ω	143-0012	A-3852			

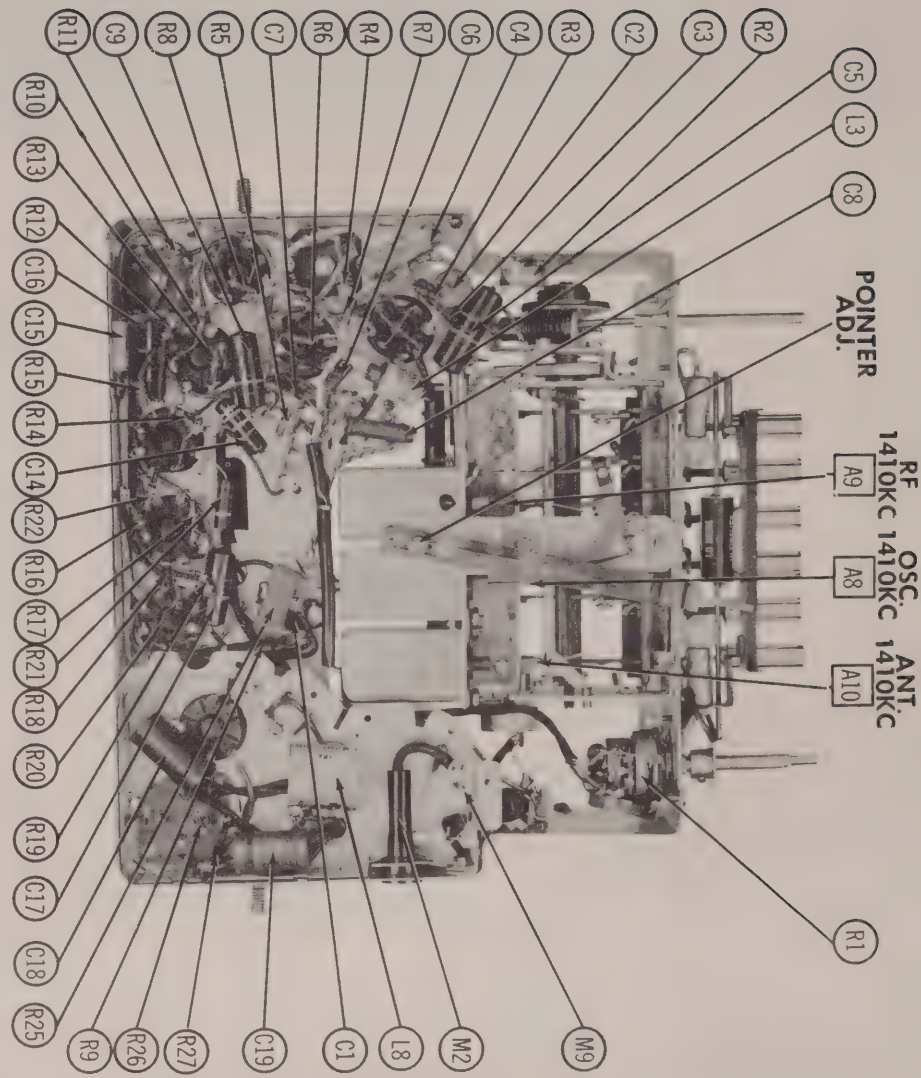
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FORD PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P.M.	3.4Ω	539-0001	ST-810 Mod. P69-V	69A3	
	CONE DIA.	V. C. DIA.				
SP2	6 1/4in. X 9 1/8 in.	1 in.				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FORD PART No.	MERIT PART No.	
L1	Ant. Hash Choke	.8Ω		148-0001		
L2	Ant. Coil	12.5Ω		111-0010		
L3	IF Trap			118-0008		Includes Capacitor
L4	RF Coil	12.5Ω		112-0008		
L5	Osc. Coil	.8Ω	2.8Ω	113-0020		
L6	Input IF	42Ω	42Ω	121-0015		
L7	Output IF	44Ω	44Ω	122-0015		
L8	Hash Choke	.1Ω		147-0007		
L9	Fil. Choke	.1Ω		145-0005		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				FORD PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Interrupter	6.3 VDC	115∿	511-0001	5301	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			FORD PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	191-0002	562-0007	307014	155014	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FORD PART No.		
M3	Bayonet	6-8	.4	White	611-0055		Type No. 55
M4	Bayonet	6-8	.4	White	611-0055		Type No. 55

MISCELLANEOUS

ITEM No.	PART NAME	FORD PART No.	NOTES
M5A	Tuner Unit	313-0016	Model 1CF743-1
B	Tuner Unit	313-0017	Model 1CM747-1
C	Tuner Unit	313-0018	Model 1CH748-1
M6	Dimmer Switch	577-0003	Not used in all models
A7	Trimmer	173-0002	Ant. Adj.
	Dial	722-0017	Model 1CF743-1
	Dial Scale	727-0003	Model 1CM747-1
	Dial Scale	727-0002	Model 1CH748-1
	Pointer	791-0016	Model 1CF743-1
	Pointer	791-0017	Models 1CM747-1, 1CH748-1

PUSH BUTTON ADJUSTMENTS

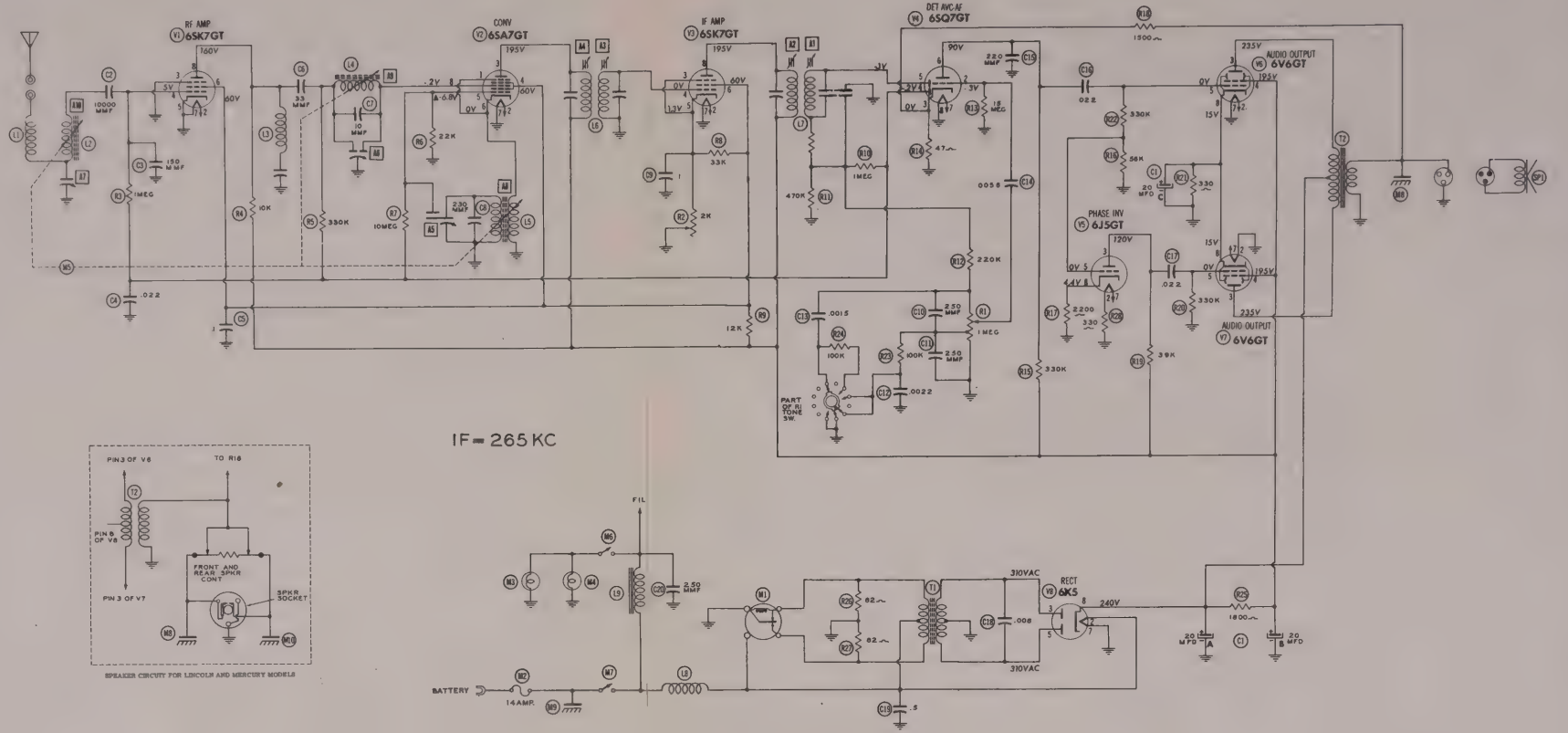
Since the push buttons are mechanical, any button may be adjusted to any station within the receiver's tuning range.

Carefully tune in the desired station manually.

Loosen the pushbutton, with your fingers, one turn counter-clockwise.

Press the button all the way in.

Tighten the button by turning clockwise with your fingers.



SPEAKER CIRCUIT FOR LINCOLN AND MERCURY MODELS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0Ω	.4Ω	0Ω	2Meg	0Ω	114KΩ	0Ω	112KΩ
V 2	6SA7GT	0Ω	.4Ω	11.8KΩ	114KΩ	22KΩ	.8Ω	0Ω	1.5Meg
V 3	6SK7GT	0Ω	.4Ω	220Ω	42Ω	220Ω	114KΩ	0Ω	11.8KΩ
V 4	6SQ7GT	0Ω	15Meg	47Ω	1.1Meg	330KΩ	1330KΩ	.4Ω	0Ω
V 5	6J5GT	0Ω	0Ω	140KΩ	0Ω	56KΩ	∞	.4Ω	2.3KΩ
V 6	6V6GT	0Ω	.4Ω	1215Ω	11.8KΩ	285KΩ	280KΩ	0Ω	330Ω
V 7	6V6GT	41Ω	0Ω	1215Ω	11.8KΩ	330KΩ	114KΩ	.4Ω	330Ω
V 8	6X5GT	∞	.4Ω	220Ω	∞	300Ω	∞	0Ω	30KΩ

* TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V8
TONE SWITCH IN "NORMAL" POSITION

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ∓ 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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KNIGHT
MODELS 96-144, 96-499

KNIGHT
MODELS 96-144, 96-499

Figure 1

GENERAL INFORMATION

The Knight Models 96-144 and 96-499 Tape Recorders are designed to magnetically record on a 5" or 7" reel of 1/4" wide tape, two tracks instead of one which doubles the playing time with no loss in frequency response or quality. These models 96-144 and 96-499 Recorders are identical except for the speed. Model 96-144 is 7-1/2" per second while the Model 96-499 is 3-3/4" per second.

Model 96-144 - 7-1/2" per second - 7" reel - 1/2 hour playing time one track, or 1 hour playing time - two track operation.

Model 96-499 - 3-3/4" per second - 7" reel - 1 hour playing time one track or, 2 hours playing time - two track operation.

These Recorders incorporate two Inputs - Radio and Microphone, two Outputs - Ext. Amplifier and Ext. Speaker, Fast Forward and Fast Rewind. The Knight Recorders may also be used as a P.A. System.

Allied Radio Corporation
833 West Jackson Boulevard, Chicago 7, Illinois

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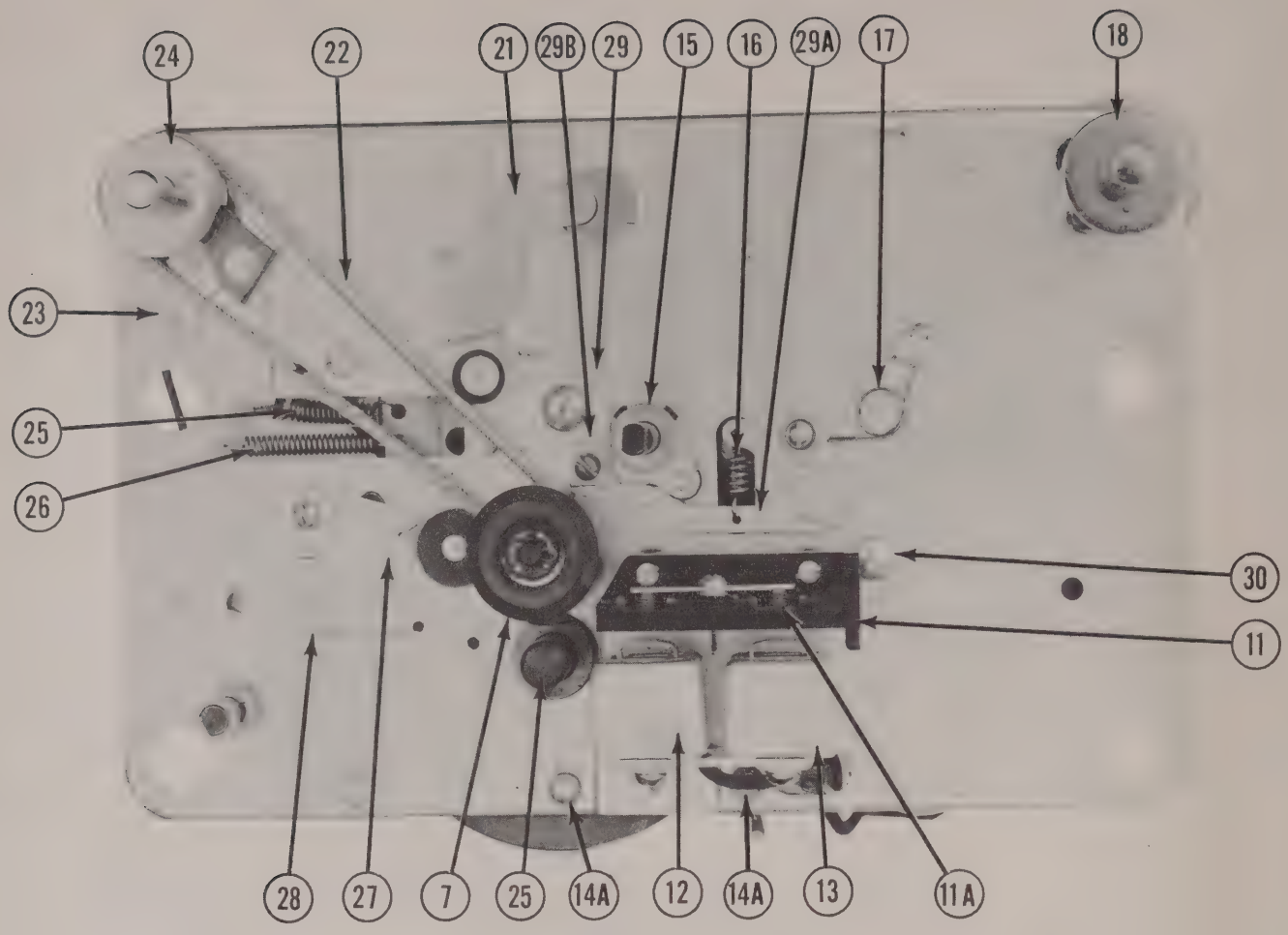


Figure 2

OPERATING INSTRUCTIONS

Preparing the Knight for Recording -

1. Insert the line cord in a convenient wall receptacle of the proper rating.

2. Place a reel of tape on the right hand spindle in such a manner that when the tape is pulled, the reel will turn clockwise. Make sure the pin on the spindle engages a slot of the reel.

NOTE: This recorder requires tape with Type B winding, i.e. the (dull) magnetic coated side faces out on the reel. In case the (dull) side of the tape faces in on the reel (Type A wound tape) it can be changed to Type B for use on this recorder by winding the tape with a half twist. The two types are identical except the way in which they are wound on the tape.

3. Place an empty reel on the left hand spindle (24).

4. Pull about 2 feet of tape from the supply reel, drop the tape into the slot between the trim covers (4 and 6). Guide the tape into any one of the three openings at the center of the empty reel. Use a pencil to hold the tape in place, then turn the reel several turns clockwise to secure the tape to the reel and to remove all slack in the tape.

5. Turn the Off-On-Tone Control on. This supplies power to the entire recorder.

To Make a Recording -

1. After the recorder has been properly prepared for recording, connect the microphone to the "Mike" jack.

2. Press down on the Record button above the volume control.

3. Turn the "Volume" control clockwise until the incoming signal causes the Record Level Indicator Eye to close on high peaks only.

NOTE: Correct recording volume is very important. Too weak a signal, which does not cause the Recording Indicator to close will result in weak playback and high background noise. Too strong a signal, causing the Indicator to overlap will result in distortion during playback.

4. Turn the tape mechanism control knob (1) to Play-Record position. Any sound now entering the microphone will be recorded on the tape.

NOTE: Make sure "Skip Forward" control is in the "Normal" position, if not the mechanism will not operate.

To Record Direct From Radio -

1. If a recording from a radio is desired, it is recommended that a connector cord be connected to the

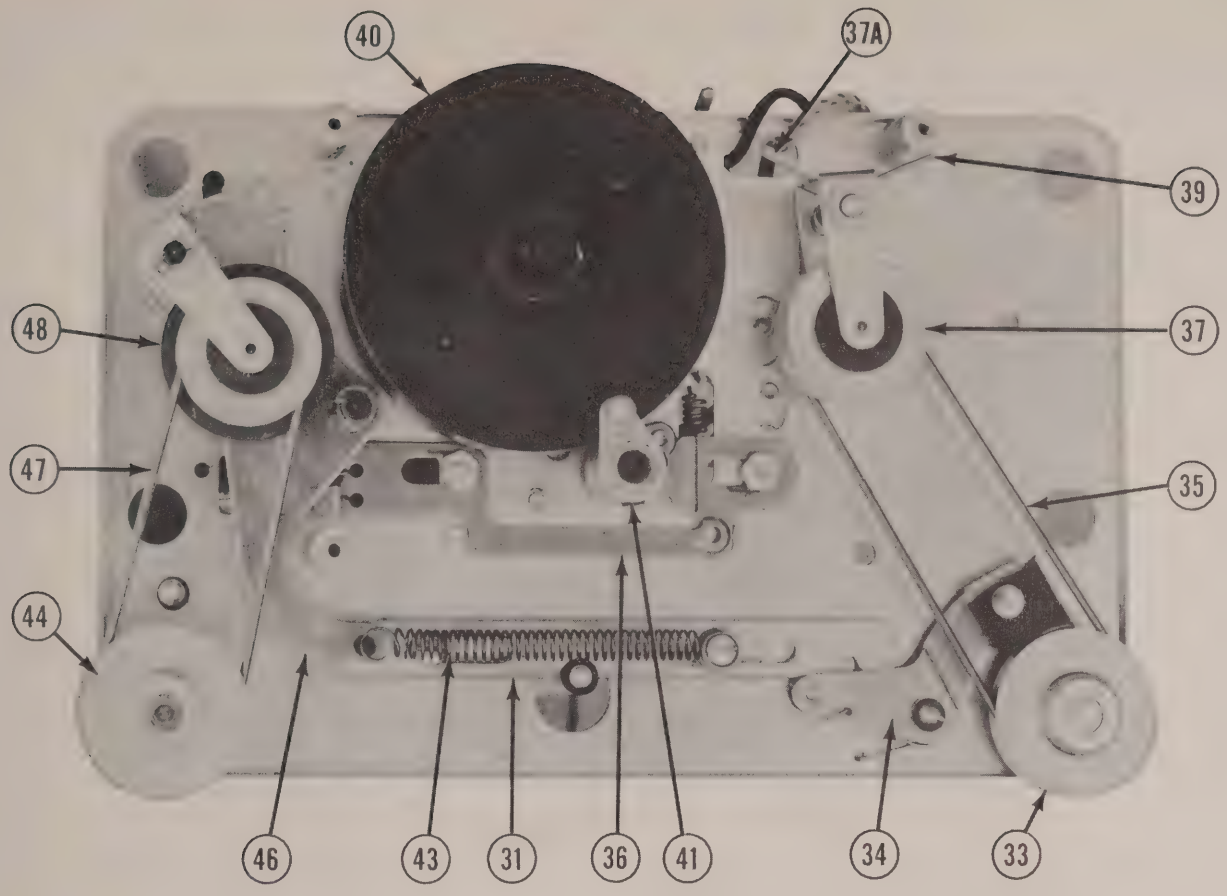


Figure 3

speaker voice coil of the radio, by means of alligator clips, and the other end (using a standard phono plug) of the cord plugged into the "Radio" Input.

2. Better quality recording from a radio set can be obtained by connecting to the output of the second detector (usually right across the volume control of the radio set). This kind of connection may be desirable in some cases, because any circuit deficiencies in the amplifier of the radio will not be included in the recording.

To Record From Record Player -

1. Connect the output leads of the crystal pickup to the Radio Input jack through the connecting cable.

2. If the player has a magnetic cartridge connect to the output of the preamplifier.

To Stop the Recorder -

The recorder may be stopped at any time by turning the mechanism control (1) to "Off". This stops the movement of the tape and removes the power to the motor.

Two Track Recording -

1. The Knight is designed for two channel recordings, therefore, after a reel of tape has been recorded a second track may be recorded on the same reel, which doubles the playing time with no loss of frequency response or quality.

NOTE: Recordings are made on 1/2 the tape width at a time; thereby, resulting in two channel recording.

2. This two channel operation is accomplished by removing the reels from the recorder, turning them over, then placing the full reel of tape on the Feed Reel spindle (18) and the empty reel on the Take Up spindle (24).

3. Thread the tape and proceed with the recording in the same manner as previously described.

4. After this track has been recorded the first track of recording is ready to be played without rewinding.

5. To Play the first track of recording place the full reel on the Feed Reel spindle and the empty reel on the Take Up spindle. Thread the tape making sure the (dull) side of the tape faces the heads, then set the control as described under "To Play a Recording".

To Rewind The Tape -

1. To rewind a portion of the tape, or an entire channel of recording for playback, the tape must be rewound to the starting point of the recording.

2. First make sure the recording light just above the Tone control is out. If not, depress the record button above the Volume control.

3. Turn the mechanism control (1) to "Rewind".

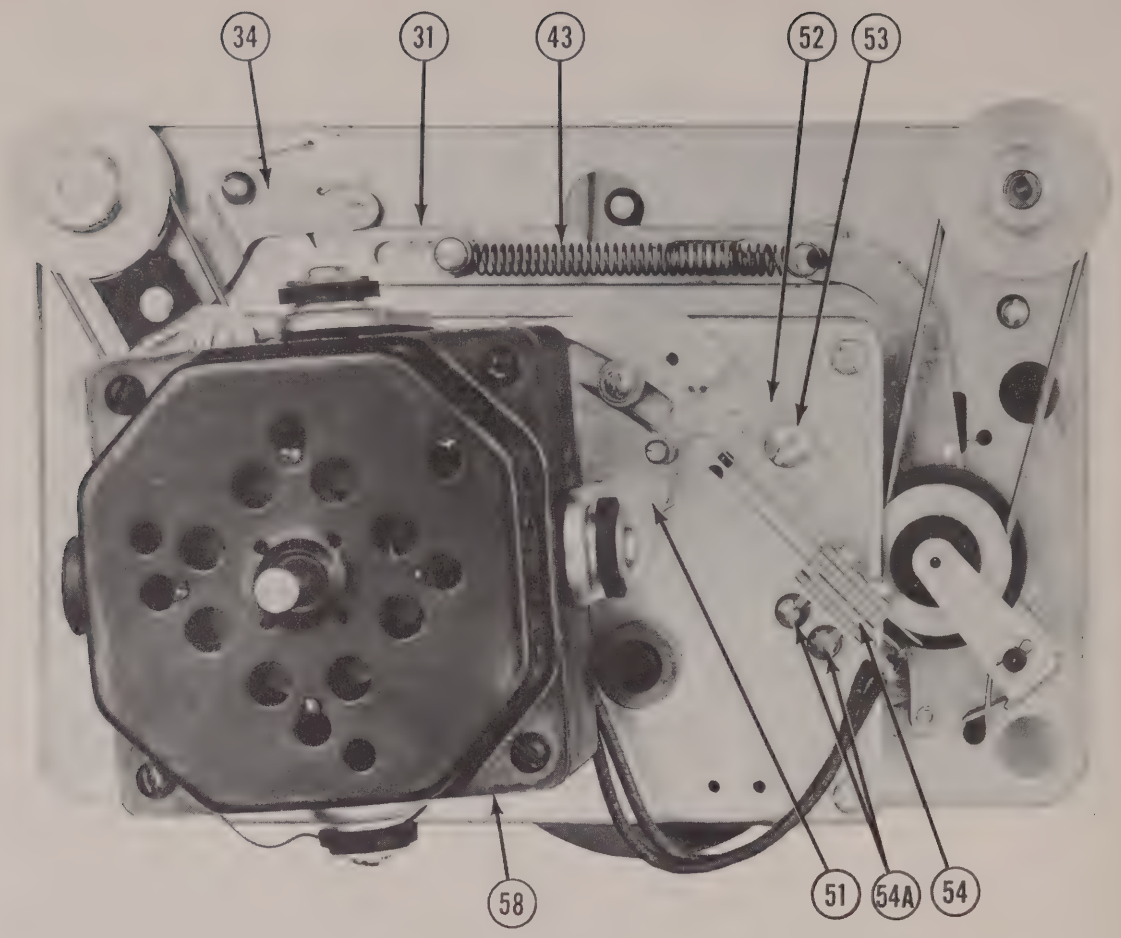


Figure 4

To Play a Recording -

1. Make sure the tape is threaded properly.

2. Be sure the record light over the Tone control is out.

3. Turn the mechanism control (1) to Play-Record position.

4. Set the volume and tone controls at desired levels.

Fast Forward -

The control marked "Skip Forward-Neutral-Normal" on the left side of the upper control panel enables you to skip forward at high speed to any desired section of the tape. This control is to be used only when the tape is moving forward in the play position. Turn the control to the left through the "Neutral" position and into the "Skip Forward" position holding it there until the desired place on the tape is reached. Then release the control by allowing it to spring back into "Neutral". Then, move the control back into "Normal".

To Play a Recording Through an External Amplifier -

1. Prepare a shielded cable with the proper plugs, connecting one end of the cable to the Amplifier Output of the recorder and the other end to the "phono" input of any good radio set, or high-fidelity record player amplifier.

To Play a Recording Through an External Speaker -

1. Any external PM speaker having a 3.2 ohm voice coil may be plugged into the External Speaker jack output. When an external speaker is plugged in, the internal speaker is automatically disconnected.

Using the Knight Recorder as a P.A. System -

1. Plug the microphone into the Radio jack.

2. Be sure the recording light above the tone control is out.

3. Keep the microphone as far as possible from the unit to avoid feed back or "howl" and adjust the tone and volume controls to your requirements.

ADJUSTMENTS

Motor Power Switch - (See Figure 4) -

1. The Off-On-Tone control when turned on supplies power to the entire mechanism, however, the motor will not run until the mechanism control knob (1) is turned to either Record-Play or Rewind Position, causing the switch (51) to make contact. Therefore the switch contacts should be open when the mechanism is in "Stop" position.

To adjust the motor switch, turn the mechanism control to the "Stop" position. Loosen the two screws (54A) and adjust the switch to the center of the bakelite pin on the motor swing plate (51). Continue to move the switch until there is approximately 1/16" gap between the contacts. Tighten the screws (54A).

The Forward Stop Lug - (See Figure 4) -

The forward Stop lug (52) should be set so the motor swing plate assembly (51) comes to a rest position against it as soon as the motor pulley (57) makes firm contact with the flywheel (40). Excessive pressure against the flywheel will prevent the motor from starting when the control lever is turned to the "Play-Record" position. Insufficient pressure will result in slippage causing "Wow". The best setting is to adjust the forward Stop lug (52) 1/16" from the edge of the swing plate (51) at the point when the drive roller begins to touch the flywheel.

There is no motor plate stop adjustment in the "Rewind" position; however, the rewind drive pulley (37) is located in a hanger whose position is adjusted by bending the Stop lug (37A), see Figure 3, against the swing plate pushing in a manner that will allow a clearance between the drive roller (57) and the rewind pulley (37) in the "Stop" position. This will also allow the drive roller to engage the drive pulley in the "Rewind" position. In this position, the rewind drive pulley hanger lug (37A) is moved away from the stop. The rewind drive pulley (37) is firmly held against the motor drive pulley (57) by the torsion spring (39) that needs no adjustment.

Pressure Lever and Arm Adjusting Plate -

Set the pressure lever (15), see Figure 2, so that it is perpendicular to the pressure arm (29A) when the control knob is in the Record-Playback position. Also adjust the arm adjusting plate (29B) so it will clear the pressure arm (29A) by 1/64" when in this position.

Detent Lever (38) - (See Exploded View) -

The roller of the detent lever (38) should be adjusted so that it will engage the detent lever (36) at point X, as shown in the exploded view, when the control is in the "Off" position.

Motor Transfer Lever (41) -

The motor transfer lever (41) should be adjusted when the control is in the "Off" position. To adjust the transfer lever (41) loosen its set screws and move the motor plate (51) until the motor drive pulley (57) is midway between the rewind drive pulley (37) and the flywheel (40), then tighten the screws.

Head Pressure -

The head pressure is adjusted by means of the two screws (14A) in the slotted holes in the head bracket (14). See Figure 2. To make the adjustment, turn the control knob (1) to "Record-Play" position. Loosen the screws (14A) then adjust the head into the tape guide block (11) until the pressure pads (11A) show a movement of slightly less than 1/32" on the reverse side of the tape guide (11).

Head Alignment -

The lateral movement of each head is done by moving the heads in the required direction by means of the screws in the slotted holes that hold the heads to the head bracket (14). The position should be such that there is no hanging up of the tape pressure guide when the control lever is turned to the "Off" position.

Make sure after the heads are adjusted that they are parallel with the tape as it is pulled past the heads.

TROUBLES

Irregular Speed "Wow" -

1. Felt pressure pads (11A) in tape guide assembly (11) worn.
   (a) Replace with new pads.

2. Oil or grease on drive roller (57), flywheel assembly (40), or pressure roller (7).
   (a) Clean with alcohol.

3. Head pressure too great (see adjustment on "Head Pressure"). Be careful not to disturb the head alignment.

4. Check pressure roller lever (15) to see if it is perpendicular to the pressure arm (29A). When in the "Record-Play" position. See Adjustments on "Pressure Lever and Arm Adjusting Plate".

5. Drive roller (57) or pressure roller (7) eccentric. Allow mechanism to run for 20 minutes. If after this time the rollers are still eccentric, replace with new rollers.

6. Motor shaft binding. Motor shaft should turn freely when the control knob is in the "Off" position. If necessary, realign bearings by tapping motor lightly with a wooden mallet.

7. Detent spring (26) not properly connected. See Figure 2. If spring (26) is not connected, the detent slide (36) will not be held against the detent lever (38) resulting in the motor drive pulley (57) not being held in firm contact with the capstan.

Motor Runs but Mechanism Will Not Operate -

1. Motor transfer lever (41) not adjusted properly. See Adjustments on "Motor Transfer Lever", and "The Forward Stop Lug".

2. Drive roller (57) defective.

3. Fast Forward control in "Neutral" position.
   (a) Turn control to "Normal".

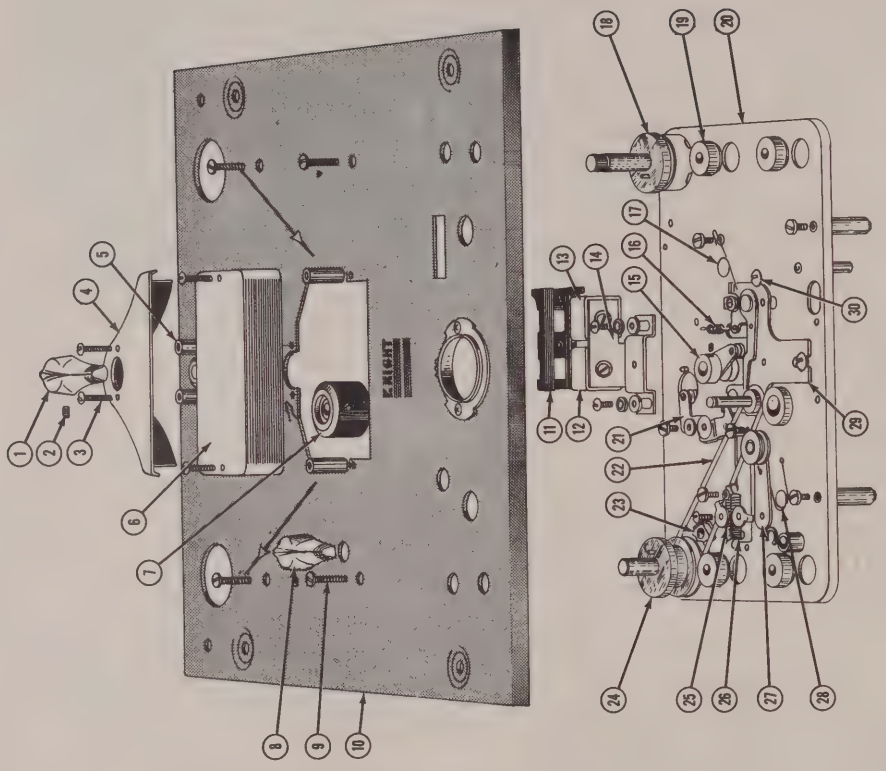
Mechanism Runs Forward But Will Not Rewind -

1. Check drive belt (35) for being broken or loose. Replace.

2. Motor transfer lever (41) not adjusted properly. See adjustment on "Motor Transfer Lever (41)".

Mechanism Rewinds But Will Not Run Forward -

1. Forward stop lug (52) out of adjustment. See Adjustment on "Forward Stop Lug".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Control Knob and Shaft Turns But Mechanism Fails To Run in Either Direction -

1. Motor transfer lever (41) loose on shaft. Readjust as described under "Motor Transfer Lever".

Mechanism Fails to Run in Fast Forward -

1. Check drive belt (47) to see if it is properly connected.

2. Mechanism control (1) not in the Play-Record position. The mechanism must be in the Play-Record position before power is supplied to the motor and also for the drive pulley (57) to engage the capstan which in turn drives the fast forward pulley (48).

Slow Speed -

1. Low operating temperature.

2. Head pressure too great. See "Head Pressure" adjustment.

3. Flywheel (40) shaft binding. Check to see that the screws holding the mounting plates (20) and (50) together are tight and that the plates are not warped.

4. Motor shaft binding. Realign bearings by tapping lightly on the motor.

Machine Will Play Back but Does Not Record -

1. Defective microphone.

2. Defective Record-Playback head (12).

3. Defective Amplifier.

High Background Noise (Hiss) -

1. Defective bias oscillator tube or circuit.

2. Defective tape.

3. Defective Record-Playback Head.

4. Record head magnetized. Demagnetize with 60 cycle AC air core coil.

Incomplete Erase -

1. Erase voltage power too low.

2. Erase head (13) open. Replace.

3. Record head lamination dirty. Clean with carbon tetrachloride.

4. Record head (13) not making proper contact with felt pressure pad (11A). See "Head Pressure" adjustment.

Poor Recording -

1. Record-Playback head (12) not at right angle to the tape. See "Head Alignment" adjustment.

2. Overloading during recording.

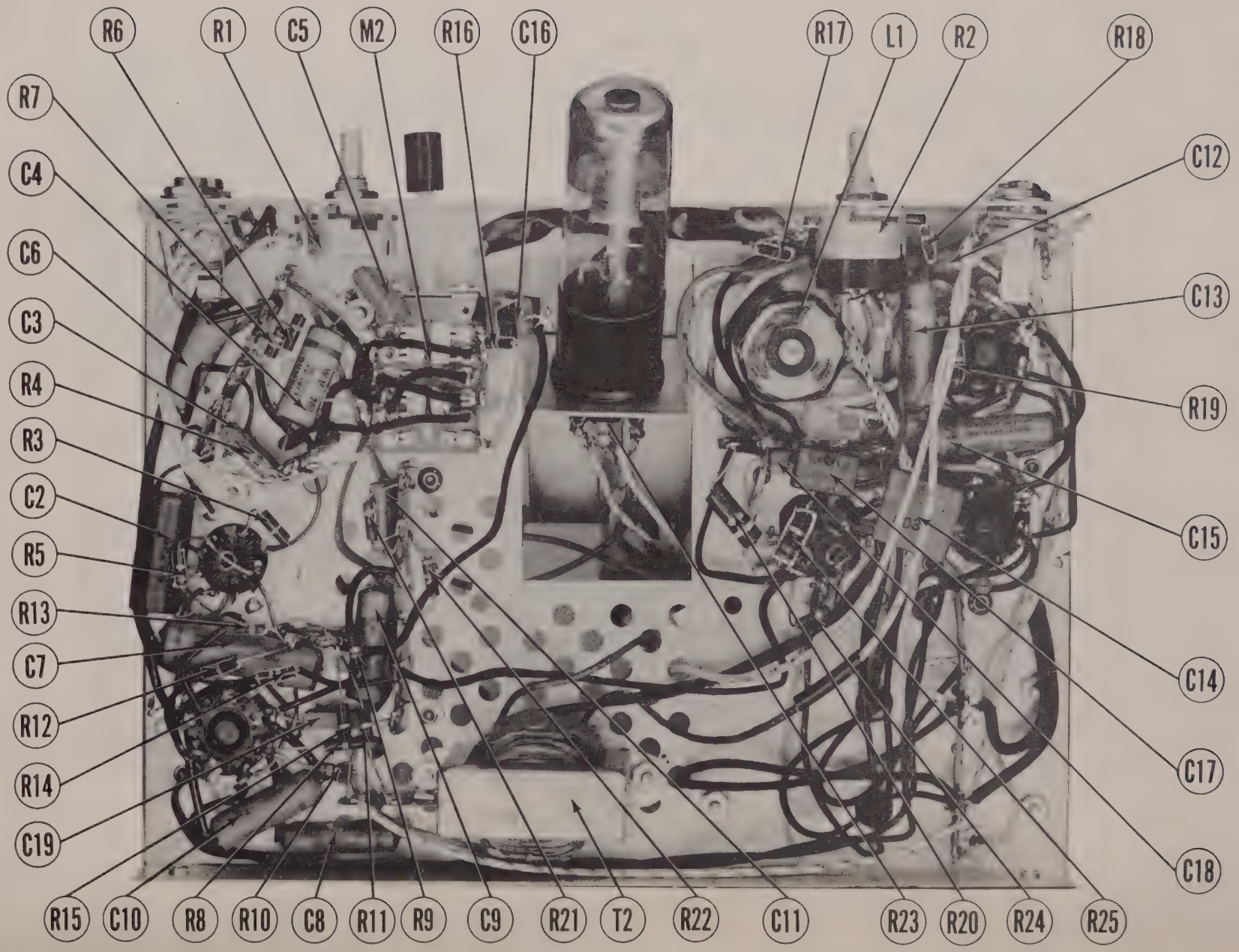
3. Defective or damaged head.

4. Head lamination damaged or worn.

5. Felt pressure pads (11A) worn or missing. Replace.

6. Head pressure too light. See "Head Pressure" adjustment.

V1
V2
V4
M3
V3
C1
V5
T1


R6
R1
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C16
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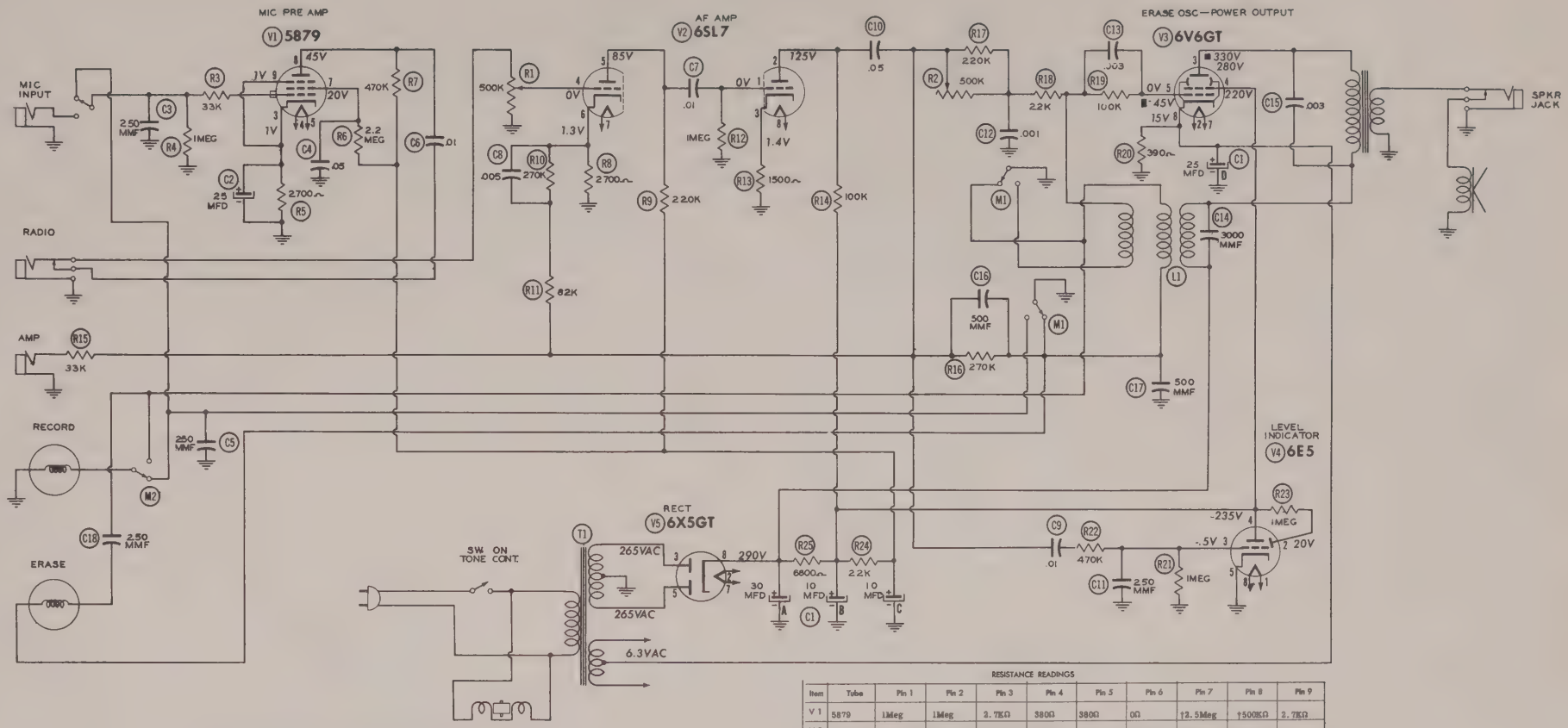

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RESISTANCE READINGS

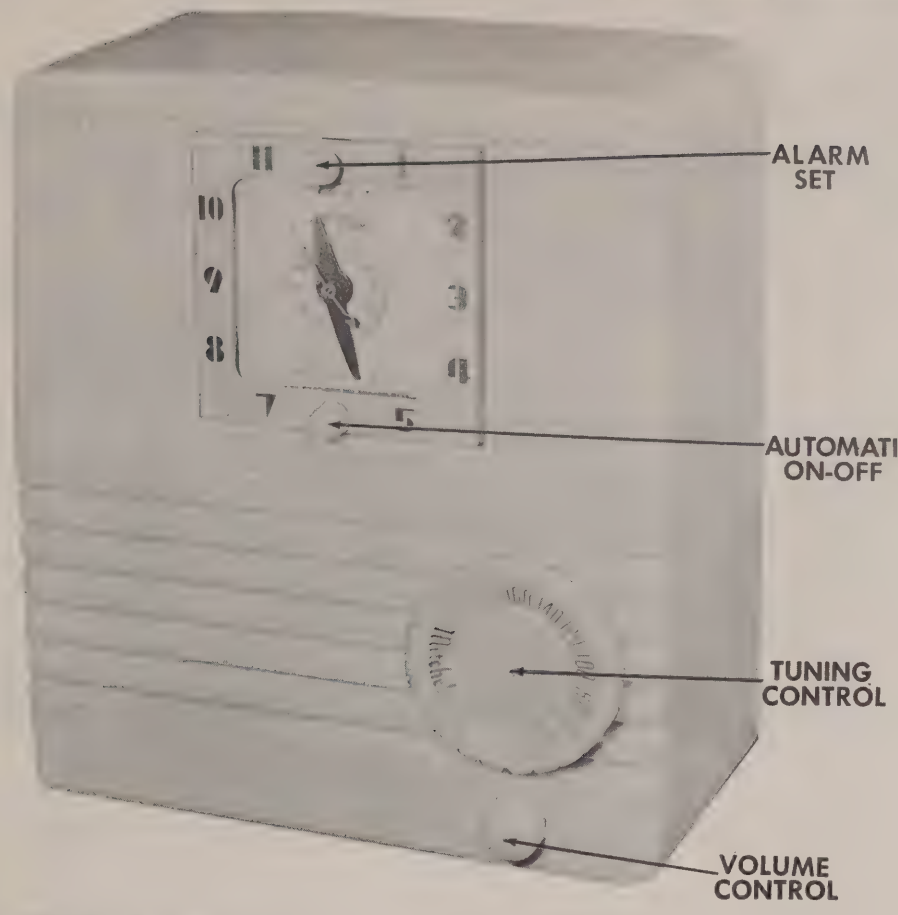
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	1Meg	1Meg	2.7KΩ	380Ω	380Ω	0Ω	†2.5Meg	†500KΩ	2.7KΩ
V 2	6SL7GT	1Meg	†120KΩ	1.5KΩ	0Ω	†250KΩ	2.7KΩ	380Ω	380Ω	
V 3	6V6GT	0Ω	380Ω	†540Ω	†8KΩ	■100KΩ 300KΩ	■ 7Ω 200KΩ	380Ω	380Ω	
V 4	6E5	380Ω	†8KΩ	1Meg	†1Meg	0Ω	380Ω			
V 5	6X5	60KΩ	380Ω	540Ω	Inf.	550Ω	Inf.	380Ω	60KΩ	

■ TAKEN IN RECORD POSITION.
† MEASURED FROM PIN 8 OF V5.

Mechnical Parts List		Electrical Parts List	
Ref. No.	Description	Ref. No.	Description
1	Control Knob	V1A	5879, Mic. Pre-Amplifier
2	Set Screw for item 1	V1B	6J7, Mic. Pre-Amplifier
3	Plate Mounting Screws	V2	6SL7GT, AF Amplifier
4	Rear Trim Cover	V3	6V6GT, Erase Oscillator-Power Output
5	Trim Cover Spacer	V4	6E5, Level Indicator
6	Front Trim Cover	V5	6X5, Rectifier
7	Pressure Roller	C1A	Filter (Electrolytic), 30 mfd. @ 350 Volts
8	Take up Reel Control Knob	C1B	Filter (Electrolytic), 10 mfd. @ 350 Volts
9	Base Plate Mounting Screw	C1C	Filter (Electrolytic), 10 mfd. @ 350 Volts
10	Base Plate	C1D	Output Cathode (Electrolytic), 25 mfd. @ 25 Volts
11	Tape Guide Assembly	C2	Mic. Pre-Amp. Cathode (Electrolytic), 25 mfd. @ 25 Volts
12	Record Head	C3	Tone Compensation, 250 mmf. @ 500 Volts
13	Erase Head	C4	Mic. Pre-Amp. Screen .05 mfd. @ 400 Volts
14	Head Mounting Bracket	C5	Fixed Trimmer, 250 mmf. @ 500 Volts
15	Head and Pressure Roller Lever	C6	Audio Coupling .01 mfd. @ 400 Volts
16	Pressure Arm Spring	C7	Audio Coupling .01 mfd. @ 400 Volts
17	Roller Plate Return Spring	C8	Tone Compensation, 005 mfd. @ 600 Volts
18	Rewind or Supply Shaft Assembly	C9	Tuning Ind. Coupling, .01 mfd. @ 400 Volts
19	Sub Mounting Plate Spacers	C10	Audio Coupling, .05 mfd. @ 400 Volts
20	Sub Mounting Plate	C11	Tuning Ind. Filter, 250 mmf. @ 500 Volts
21	Pressure Release Lever for Fast Forward	C12	Tone Compensation, .001 mfd. @ 600 Volts
22	Take Up Drive Belt	C13	Tone Compensation, .003 mfd. @ 600 Volts
23	Take Up Brake Assembly	C14	Fixed Trimmer, 3000 mmf. @ 500 Volts
24	Take Up Shaft Assembly	C15	Output Plate, .003 mfd. @ 400 Volts
25	Brake Spring	C16	Oscillator Grid Cap., 500 mmf. @ 500 Volts
26	Detent Spring	C17	Fixed Trimmer, 500 mmf. @ 500 Volts
27	Tension Idler Pulley Assembly	C18	Fixed Trimmer, 250 mmf. @ 500 Volts
28	Tension Spring for item 27	C19	Oscillator Coupling, 250 mmf. @ 500 Volts
29	Roller Plate	R1	Volume Control, 500K ohm, 1/2 Watt
30	Roller Plate Guide Screw and Bushing	R2	Tone Control, 500K ohm, 1/2 Watt
31	Brake and Head Pressure Release Lever	R3	Mic. Pre-Amp. Grid, 33K ohm, 1/2 Watt
32	Tension Spring for Rewind Pulley Brake	R4	Mic. Pre-Amp. Grid, 1 Meg.
33	Rewind Pulley	R5	Mic. Pre-Amp. Cathode, 2700 ohm
34	Supply Reel Brake Assembly	R6	Mic. Pre-Amp. Screen, 2.2 Meg.
35	Rewind Drive Belt	R7	Mic. Pre-Amp. Plate, 470K ohm
36	Detent Slide	R8	AF Amp. Cathode, 2700 ohm
37	Rewind Drive Pulley Assembly	R9	AF Amp. Plate, 220K ohm
38	Detent Lever Assembly	R10	Tone Compensation, 270K ohm
39	Tension Spring for item 37	R11	Tone Compensation, 82K ohm
40	Flywheel Assembly	R12	AF Amp. Grid, 1 Meg.
41	Motor Transfer Lever Assembly	R13	AF Amp. Cathode, 1500 ohm
42	Shouldered Nut	R14	AF Amp. Plate, 100K ohm
43	Tension Spring	R15	Tone Compensation, 33K ohm
44	Fast Forward Drive Pulley	R16	Tone Compensation, 270K ohm
45	Fast Forward Control Cam and Shaft	R17	Tone Compensation, 220K ohm
46	Fast Forward Pivot Lever Assembly	R18	Output Grid, 22K ohm
47	Fast Forward Drive Belt	R19	Output Grid, 100K ohm
48	Fast Forward Drive Pulley Assembly	R20	Output Cathode, 390 ohm, 1 Watt
49	Tension Spring For item 48	R21	Level Indicator Grid, 1 Meg. 1/2 Watt
50	Mounting Plate	R22	Level Indicator Network, 470K ohm
51	Motor Swing Plate Assembly	R23	Level Indicator Plate, 1 Meg.
52	Motor Stop Lug	R24	Decoupling, 22K ohm
53	Stop Lug Adjustment Screw	R25	Filter, 6800 ohm
54	Motor Switch	T1	Power Transformer
55	Felt Washer	T2	Output Transformer
56	Rubber Grommet	SP1	Speaker
57	Motor Pulley	SP2	Cone (3 ohm voice coil)
58	Motor	L1	Erase Oscillator Coil
59	Motor Mounting Screw	M1	Interlock Switch
60	Motor Mounting Washer	M2	Function Switch
61	Motor Mounting Spacer		

MITCHELL
MODEL 1267

MITCHELL
MODEL 1267



MITCHELL
MODEL 1267

TRADE NAME	Mitchell Model 1267
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.
TYPE SET	AC Operated Superheterodyne Receiver With Electric Clock.
TUBES (FIVE)	Types 12A8GT Conv., 12J7GT IF Amp., 12Q7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B -.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B -.	455KC (400~mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for max. output.	"	A5	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12A8GT	12A8GT	8A	
V2	IF Amp.	12J7GT	12J7GT	7R	
V3	Det.-AVC-AF Amp.	12Q7GT	12Q7GT	7V	
V4	Audio Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	N-7889	PRS150/50-30		BRD5315A		TVA-2450	Filter (Blue)
B	30	150							Filter (Red)
C2	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Osc. Anode
C4	.02	400	N-1376	P488-02	DF-203	PTE4S2		4TM-S2	AVC Filter
C5	100		N-7549	SI100N750	TCN-100		N-750L-101		Fixed Trimmer
C6	100		N-6015	SI100	D6-101	5W5T1	GPIK-101	5GA-T1	Diode RF Filter
C7	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C8A	.005		♦		♦ PC-71				Audio Coupling
B	250								AF Amp. Plate
C									Power Output Grid
C9	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Power Output Plate
C10	.05	400	N-1346	P488-05	DF-503	PTE4S5		4TM-S5	Rectifier Plate
C11	.05	200	N-1345	P288-05	DF-503	PTE4S5		2TM-S5	Line Isolation

♦ Items C8A, C8B, C8C, R9A, R9B are combined in one unit.
When replacing seperately C8B and C8C should total 250MMF.

CONTROLS

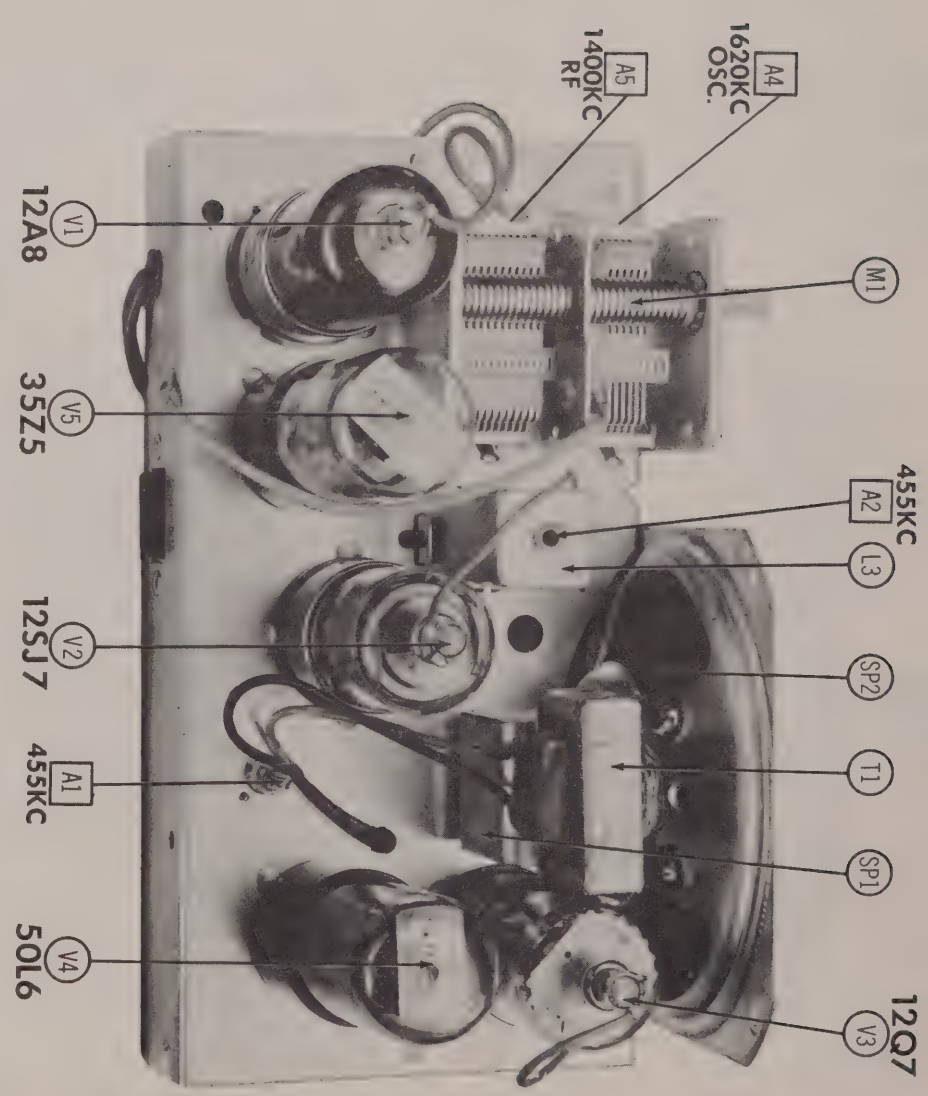
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500K	½	N-7957	Q13-133	AG-60-Z	BSK-60	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	47KΩ	½	N-4063	BTS-47K	Osc. Grid
R3	10Meg	½	N-1623	BTS-10Meg	AVC Network
R4	27KΩ	½		BTS-27K	Conv. Screen See Note
R5	1Meg	½	N-1262	BTS-1Meg	AVC Network
R6	4.7Meg	½	N-4061	BTS-4.7Meg	AVC Network
R7	1Meg	½	N-1262	BTS-1Meg	AVC Network
R8	6.8Meg	½	N-4028	BTS-6.8Meg	AF Amp. Grid
R9A	250KΩ	1	♦	BTS-220K	AF Amp. Plate
B	500KΩ	1		BTS-470K	Output Grid
R10	220Ω	1	N-4024	BTS-220	Output Cathode
R11	1200Ω	1	N-4900	BTA-1200	Filter

♦ Items R9A, R9B, C8A, C8B and C8C are combined into one unit
Note - Some Models use 22KΩ resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MITCHELL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.6KΩ	3.7Ω	305Ω	.7Ω	Part of N-7824	A-3332 ①	A-2928 ①	RO-2①	① Bend Mounting Tabs Down, File out slots and mount on original Bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.7Ω	Part of N-7824	ST-113 Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

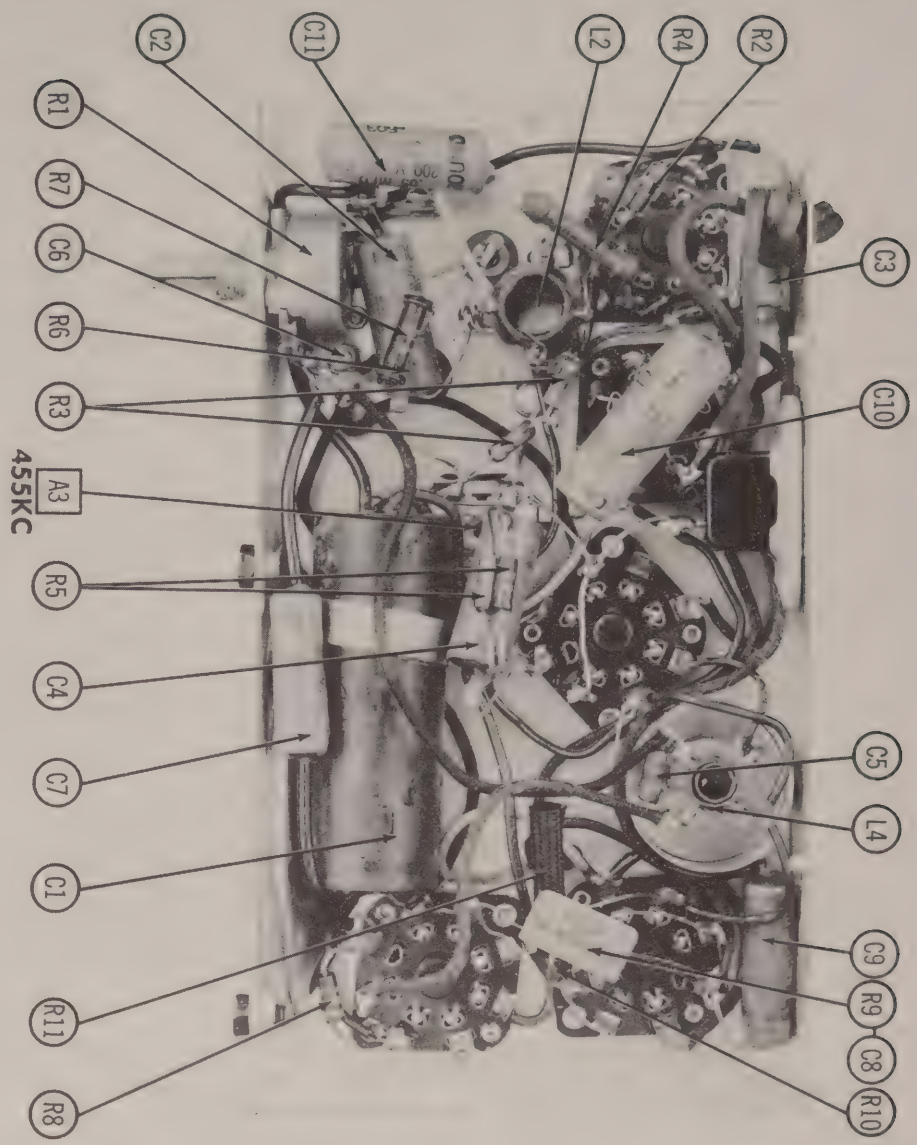
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MITCHELL PART No.	MERIT PART No.	
L1	Loop Ant.	3.2Ω		N-7956		
L2	Osc. Coil	2.4Ω	7.5Ω	N-8263		
L3	Input IF	14.6Ω	14Ω	N-7888	BC-352	
L4	Output IF	22Ω	22Ω	N-7542		

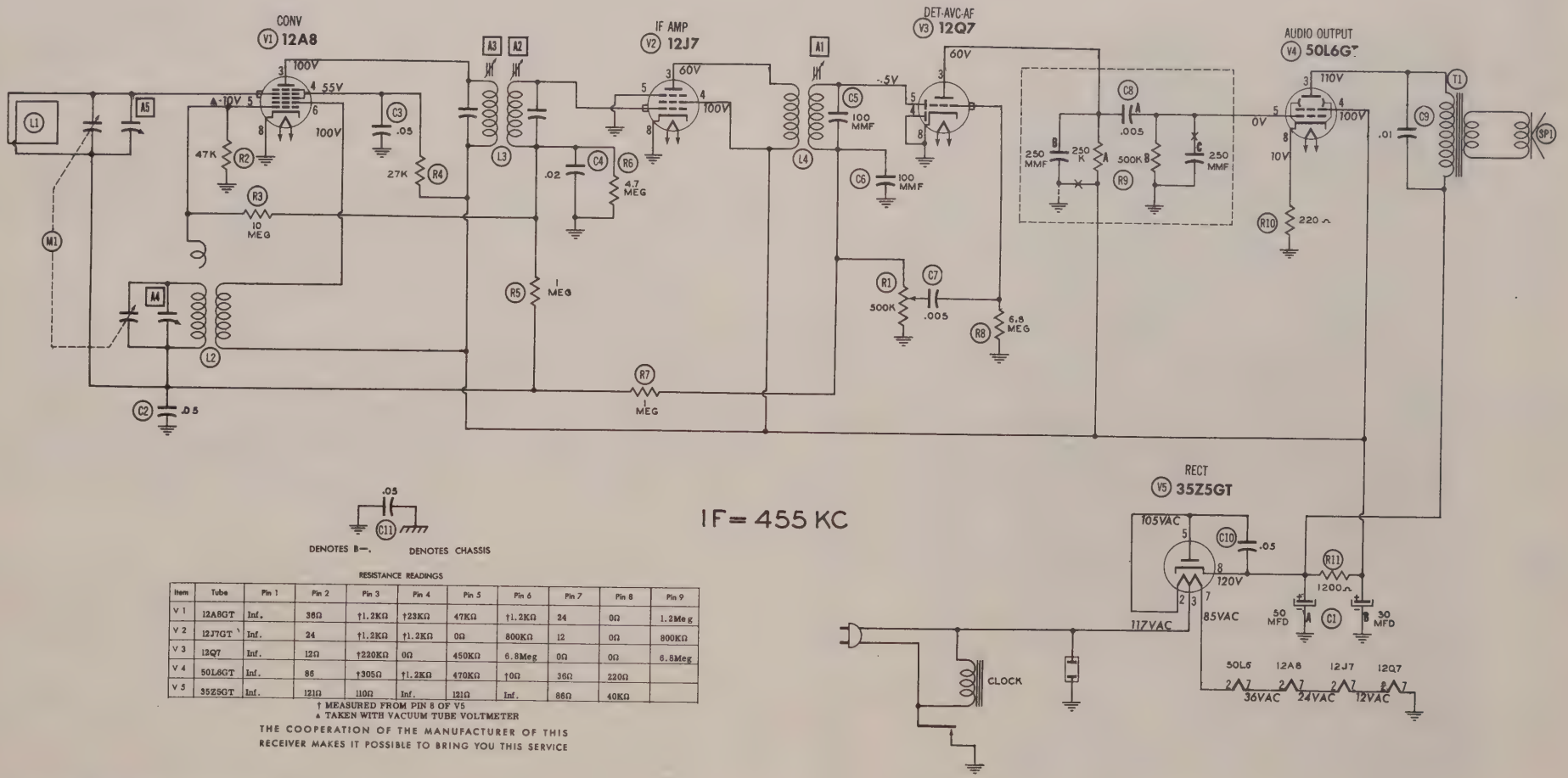
MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M1	2 Gang Var. Cap.	N-7141	(18-397MMF, 18-153MMF)

CHASSIS—BOTTOM VIEW



MITCHELL MODEL 1257



DENOTES B—. DENOTES CHASSIS

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12A8GT	Inf.	36Ω	†1.2KΩ	†23KΩ	47KΩ	†1.2KΩ	24	0Ω	1.2Meg
V 2	12J7GT	Inf.	24	†1.2KΩ	†1.2KΩ	0Ω	800KΩ	12	0Ω	800KΩ
V 3	12Q7	Inf.	12Ω	†220KΩ	0Ω	450KΩ	6.8Meg	0Ω	0Ω	6.8Meg
V 4	50L6GT	Inf.	86	†305Ω	†1.2KΩ	470KΩ	†0Ω	36Ω	220Ω	
V 5	35Z5GT	Inf.	121Ω	110Ω	Inf.	121Ω	Inf.	86Ω	40KΩ	

† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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158-7

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MOTOROLA
MODEL 14T4, B (Ch. TS-216)

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MOTOROLA
MODEL 14T4, B (Ch. TS-216)

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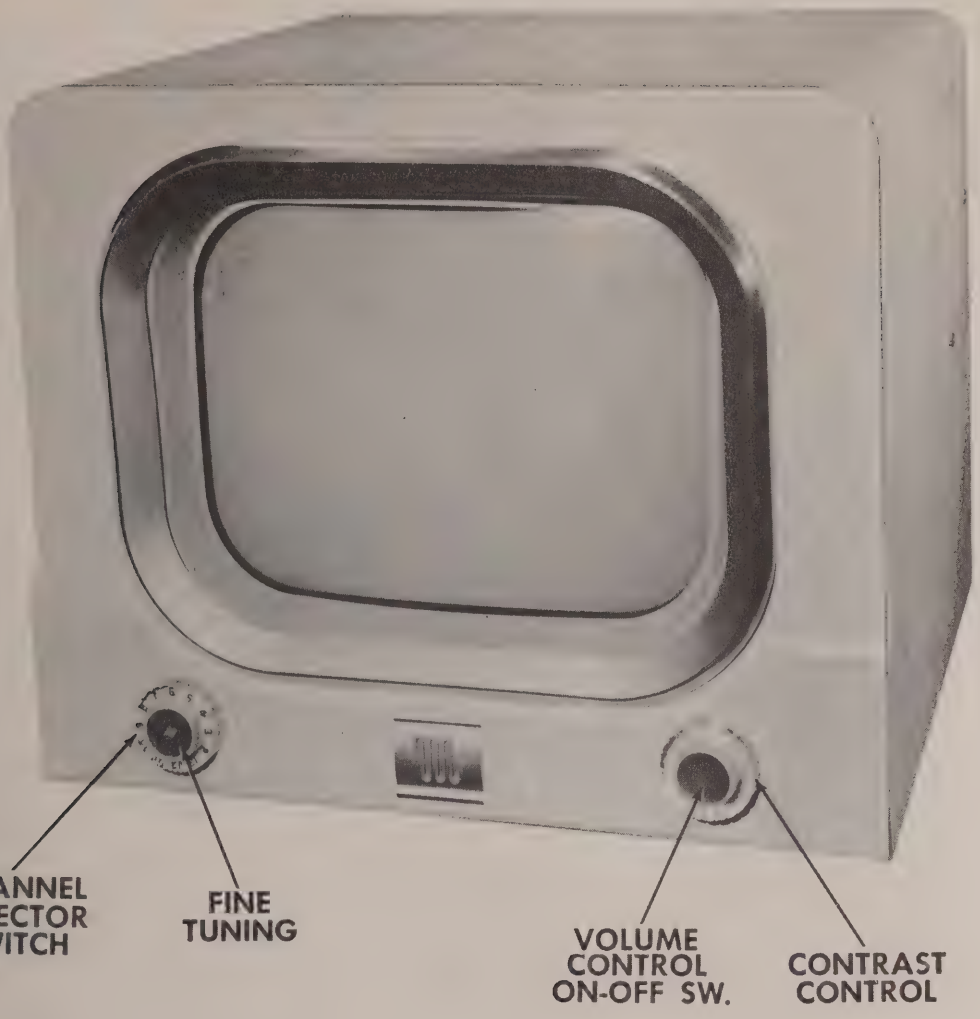
DATE 1-52 SET 158 FOLDER 8



MOTOROLA
MODEL 14T4, B (Ch. TS-216)

MOTOROLA 14T4B

TRADE NAME	Motorola Models 14T4, 14T4B, (Chassis TS-216).
MANUFACTURER	Motorola Inc. 4545 Augusta Blvd. Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	110-120 Volts AC -60 Cycle
RATING	Approx. 1.4Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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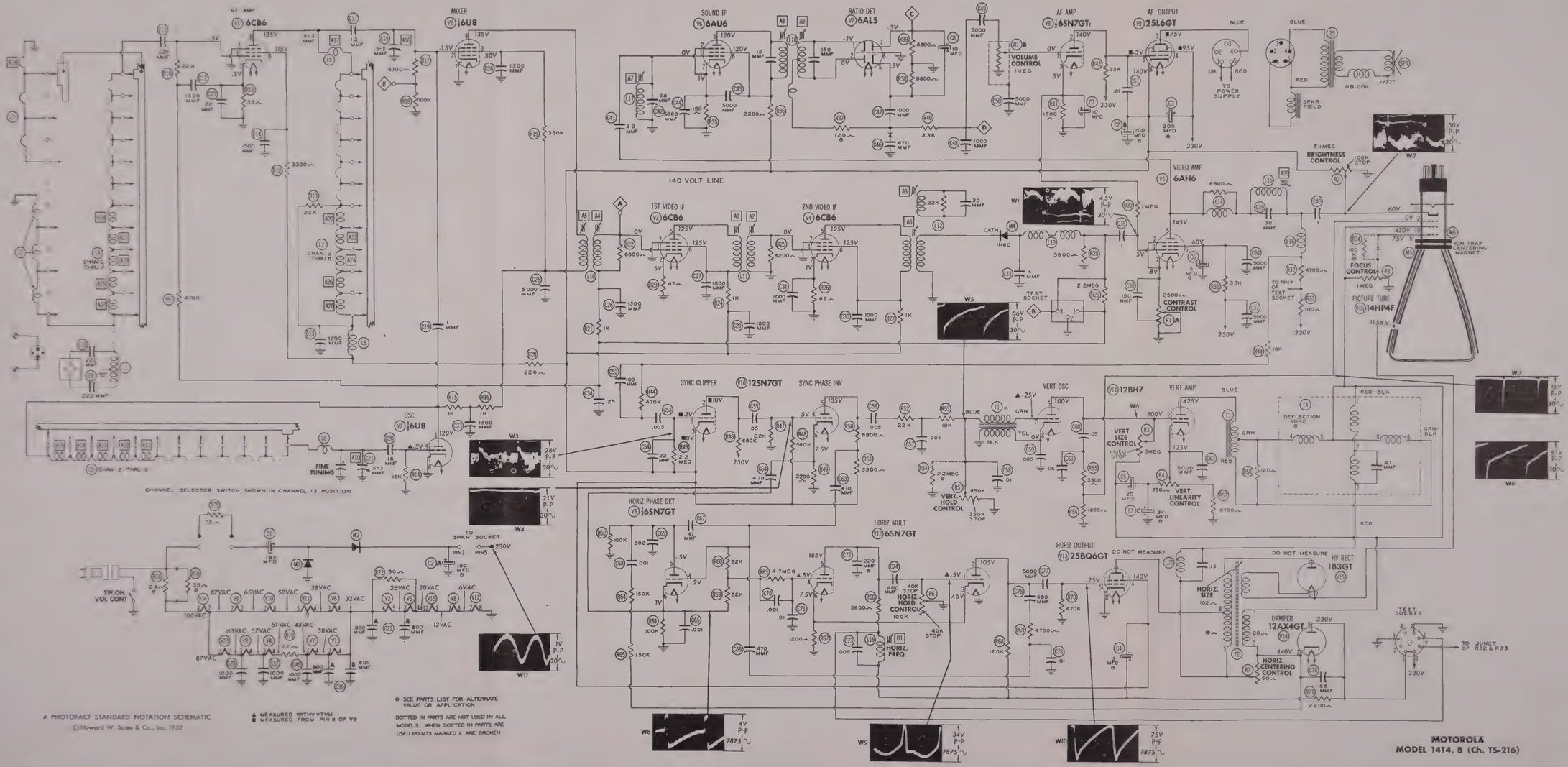

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▲ MEASURED WITH V-T V.T.V.M.
■ MEASURED FROM PIN 8 OF V9

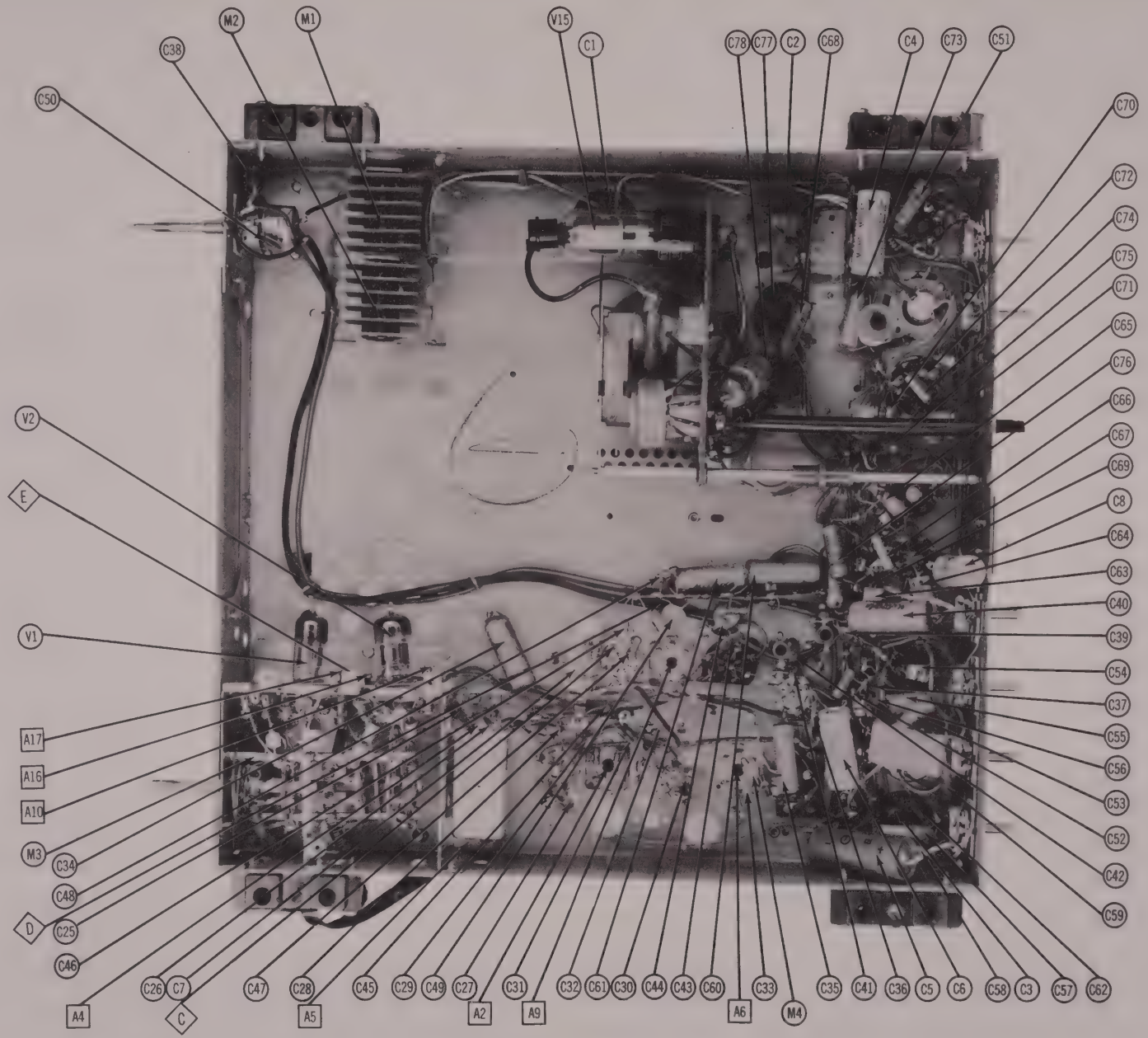
⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN

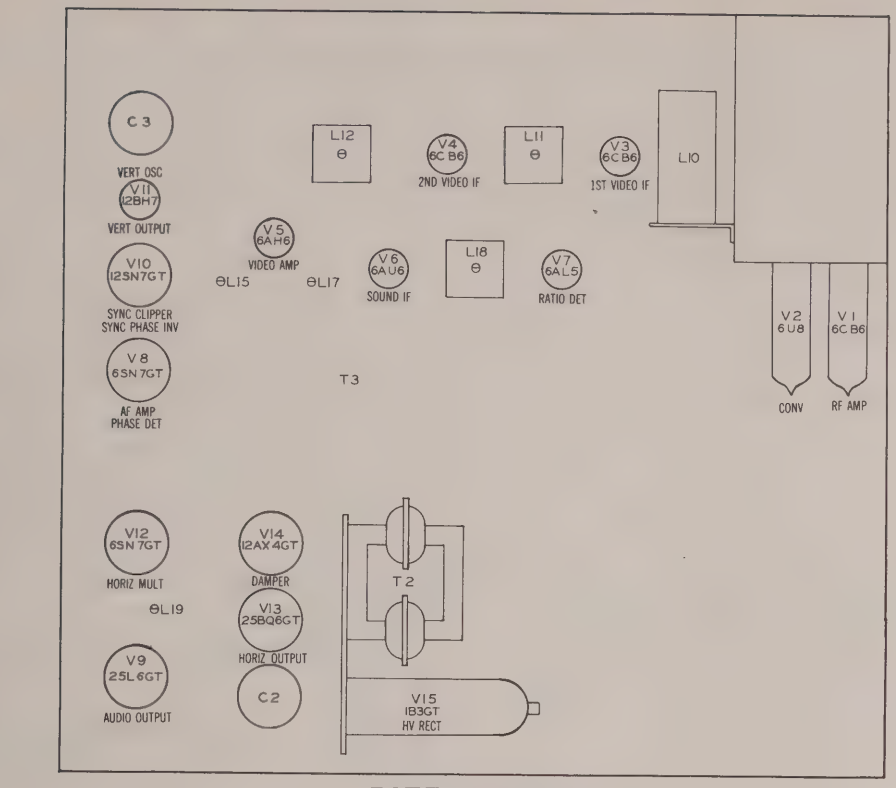
MOTOROLA
MODEL 14T4, B (Ch. TS-216)

MOTOROLA
MODEL 14T4, B (Ch. TS-216)

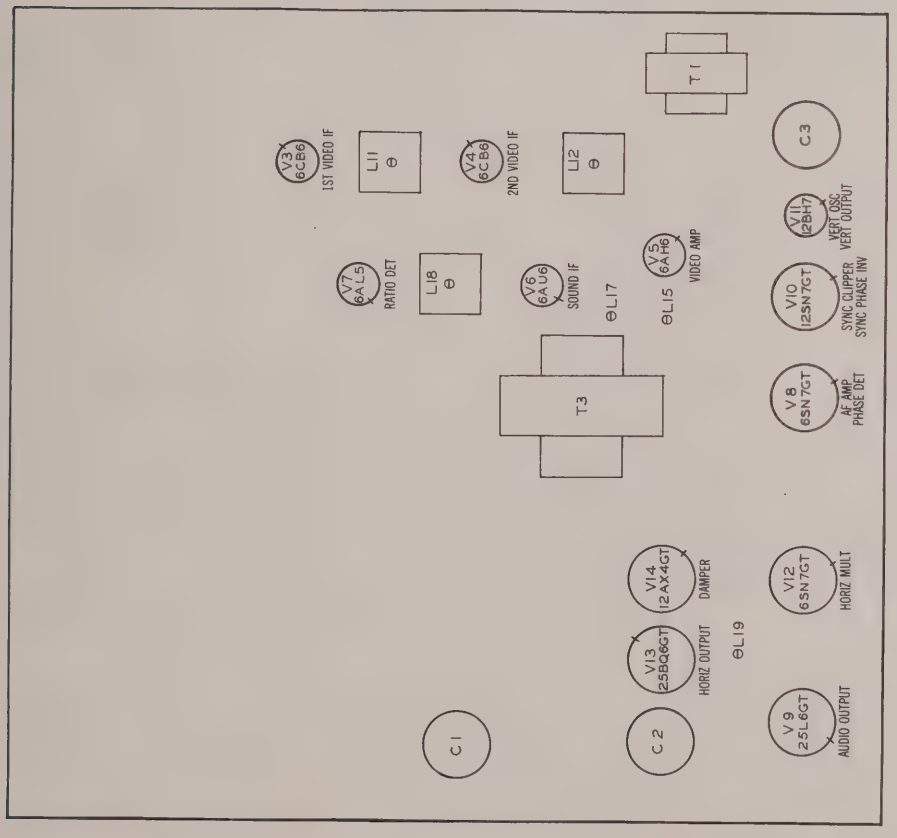
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal output tube, (V13), from its socket and connecting an 80Ω 10 Watt Resistor between Pins 2 and 7 of the tube socket.
If the set is to be aligned with the picture tube removed, short Pins 1 and 12 of the picture tube socket to complete the filament string.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery thru a 47KΩ Resistor to terminal 1 of the test socket, connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to Point (A). Low side to chassis.	24MC (10MC swp)	24.75MC	Any channel which causes no interference	Vert. amp. thru 47KΩ to Point (B) Low side to chassis.	A1, A2	Connect an 820Ω Resistor across terminals 1 and 4 of L12. Adjust A1 and A2 for symmetrical response similar to Fig. 1 centered at 24,75MC.
2.	"	"	"	21.9MC	"	"	A3	Adjust for MINIMUM marker indication at the 21.4MC point on response curve.
3.	"	High side to Point (E). Low side to chassis.	"	24.75MC	"	"	A4, A5	Adjust for symmetrical response similar to Fig. 2 centered at 24.75MC.
4.	"	"	"	21.9MC 22.9MC 26.4MC	"	"	A6	Remove the damping resistor and adjust A6 for response curve similar to Fig. 3 with marker within the limits shown. If necessary SLIGHTLY retouch A1, A2, A4 and A5 for proper response.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to Point (B). Low side to chassis.	4.5MC (450KC swp)	4.5MC	Any channel not used locally.	Vert. amp. to Point (C). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C8. Adjust for maximum amplitude and symmetry as per Fig. 4.
6.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis	A9	Reconnect capacitor C8. Adjust A9 so 4.5MC occurs at center of crossover lines as per Fig. 5. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the bias battery and short the AGC line to chassis.
Remove the bottom cover from the tuner.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC swp.)	193.25MC 197.75MC	10	Vert. amp. thru 47KΩ to Point (B). Low side to chassis.	A10	Adjust to place the sound marker slightly higher in frequency than the 21.9MC trap dip. This is necessary to compensate for the frequency shift caused by the cover being removed.
8.	"	"	213MC (10MC swp)	211.25MC 215.75MC	13	"		Check all high band channelsto see if the markers can be properly placed within 30 deg. rotation from mid-position on the fine tuning control. If not, adjust L6 by expanding or compressing the coil turns. If L6 is changed it may be necessary to re-adjust A10 on channel 10.
			207MC (10MC swp)	205.25MC 209.75MC	12			
			201MC (10MC swp)	199.25MC 203.75MC	11			
			189MC (10MC swp)	187.25MC 191.75MC	9			
			183MC (10MC swp)	181.25MC 185.75MC	8			
			177MC (10MC swp)	175.25MC 179.75MC	7			
9.	"	"	85MC (10MC swp)	83.25MC 87.75MC	6	"	A11	Expand or compress coil turns to place sound marker as in Step 7.
10.	"	"	79MC (10MC swp)	77.25MC 81.75MC	5	"	A12	"
11.	"	"	69MC (10MC swp)	67.25MC 71.75MC	4	"	A13	"
12.	"	"	63MC (10MC swp)	61.25MC 65.75MC	3	"	A14	"
13.	"	"	57MC (10MC swp)	55.25MC 59.75MC	2	"	A15	

ALIGNMENT INSTRUCTIONS (CONT.)

ANTENNA & RF ALIGNMENT

Leave the AGC line shorted to chassis.
Disable the local oscillator by shorting across the entire oscillator inductance, (from channel 2 coil to channel 13 coil).
The antenna coils are tuned to the video carriers, and the RF coils are tuned to the sound carriers.
Turn A17 so the screw is centered in the coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	177MC (10MC swp)	175.25MC 179.75MC	7	Vert. amp. thru 47KΩ to Point (E). Low side to chassis.	A16	Adjust to place markers within the limits shown in Fig. 6.
15.	"	"	213MC (10MC swp)	211.25MC 215.75MC	13	"	A17	Adjust to place markers within the limits shown in Fig. 6. Recheck channel 7 and retouch A16 if necessary.
16.	"	"	207MC (10MC swp)	205.25MC 209.75MC	12	"	A18	Check all high band channels for response within the limits of Fig. 6. If necessary the peak of the responses may be sharpened or broadened by altering the position of the ground end of the high frequency matching buss (A18). The normal position for the wire is approximately 3/16" from the switch shield.
			201MC (10MC swp)	199.25MC 203.75MC	11			
			195MC (10MC swp)	193.25MC 197.75MC	10			
			189MC (10MC swp)	183.25MC 191.75MC	9			
			183MC (10MC swp)	181.25MC 185.75MC	8			
17.	"	"	85MC (10MC swp)	83.25MC 87.75MC	6	"	A19 A20	Expand or compress coil turns for response curve within the limits of Fig. 7.
18.	"	"	79MC (10MC swp)	77.25MC 81.75MC	5		A21 A22	"
19.	"	"	69MC (10MC swp)	67.25MC 71.75MC	4	"	A23 A24	"
20.	"	"	63MC (10MC swp)	61.25MC 65.75MC	3	"	A25 A26	"
			57MC (10MC swp)	55.25MC 59.75MC	2		A27 A28	

4.5 MC TRAP ADJUSTMENT

After alignment is completed and set restored to original operation, examine the picture for evidence of 4.5MC interference, (grain effect in horizontal lines). If interference is present adjust A29 to minimize it.

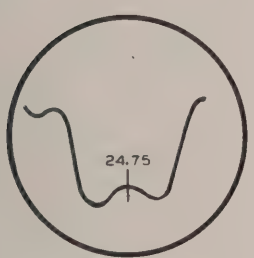


FIG.1

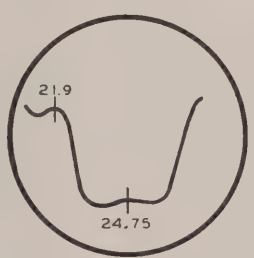


FIG.2

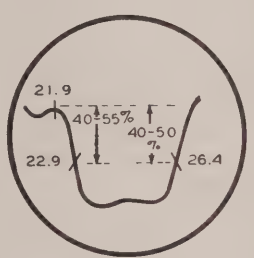


FIG.3

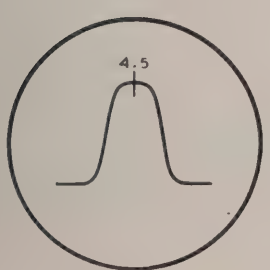


FIG.4

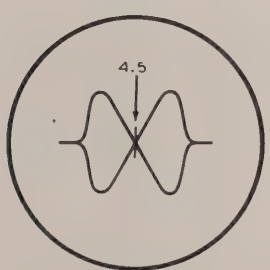


FIG. 5

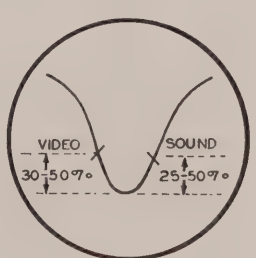


FIG.6

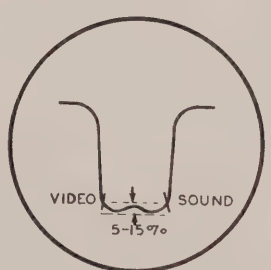


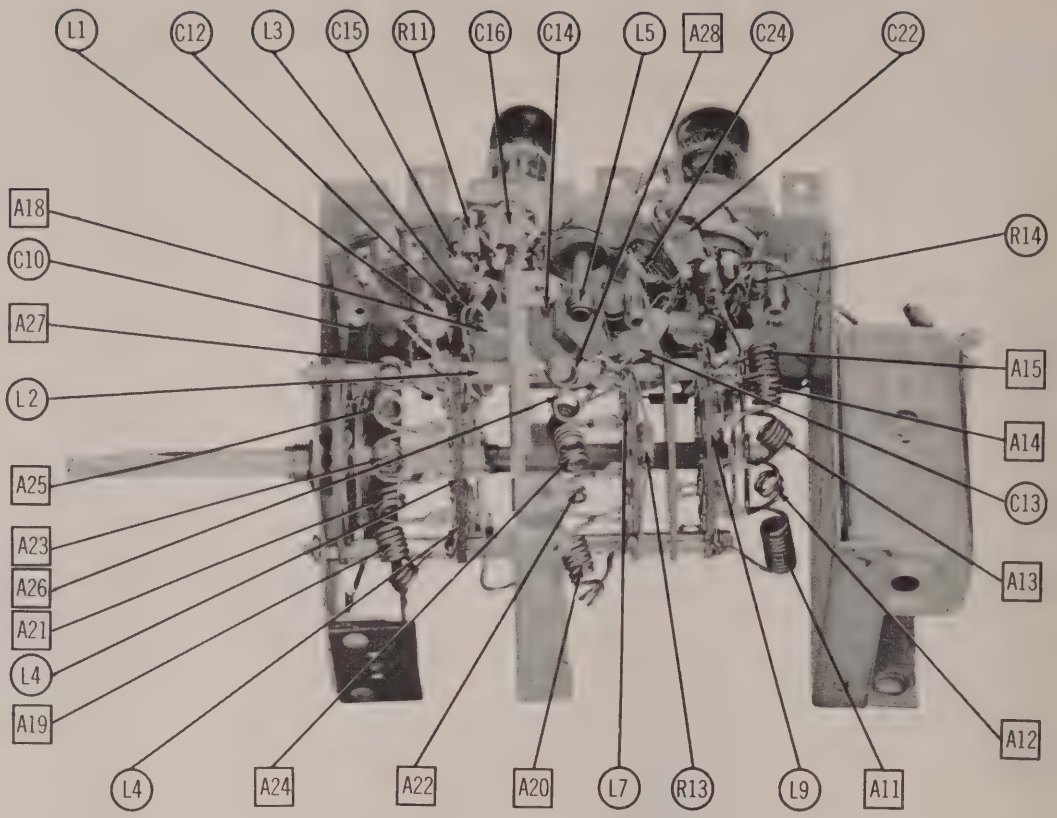
FIG.7

RESISTANCE MEASUREMENTS

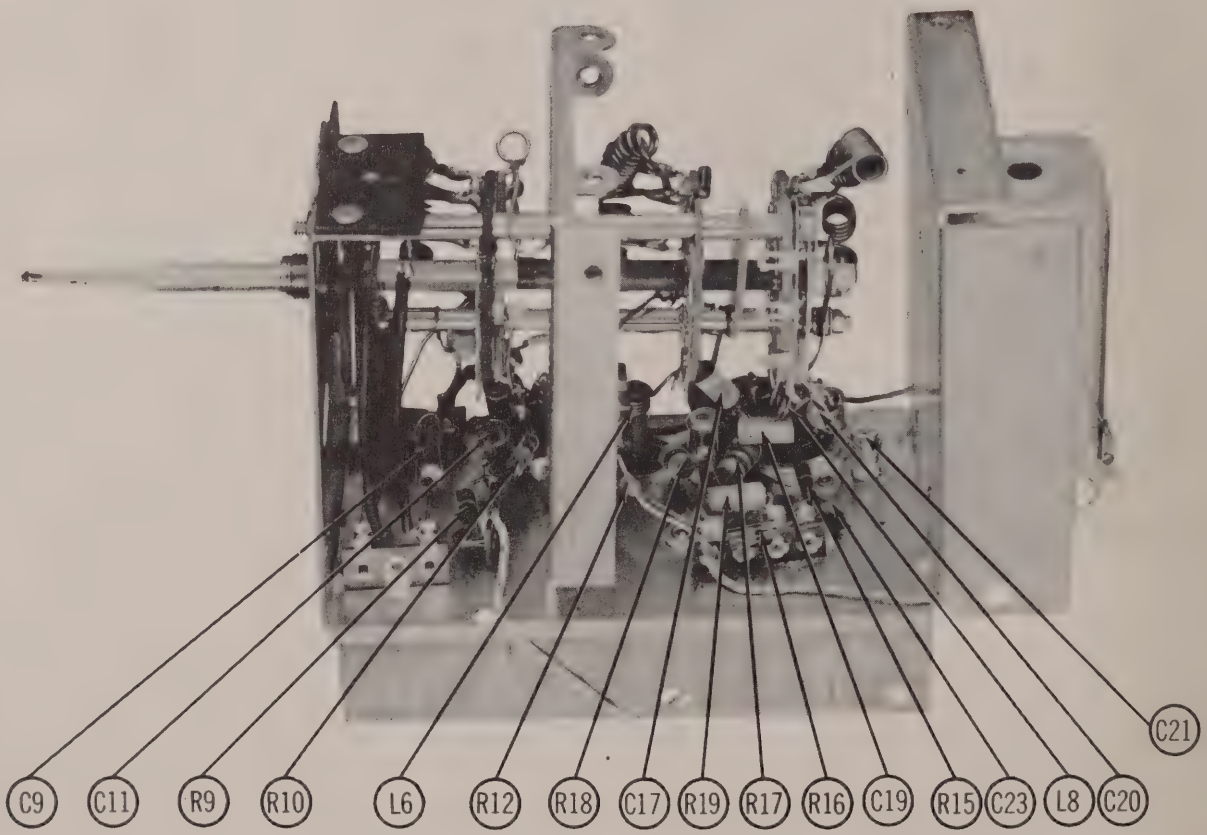
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	2.6Meg	33Ω	11Ω	8.5Ω	■220Ω	■3.5KΩ	0Ω		
V 2	6U8	■2.2KΩ	100KΩ	■330KΩ	8.5Ω	6.5Ω	■220Ω	0Ω	0Ω	15KΩ
V 3	6CB6	2.2 Meg	47Ω	23Ω	22Ω	■1KΩ	■1KΩ	0Ω		
V 4	6CB6	.2Ω	82Ω	22Ω	20Ω	■1KΩ	■1KΩ	0Ω		
V 5	6AH6	1Meg	42Ω	6.5Ω	5Ω	†5KΩ	†33KΩ	42Ω		
V 6	6AU6	1.1Ω	150Ω	12Ω	8.5Ω	■2.2KΩ	■2.2KΩ	150Ω		
V 7	6AL5	Inf	Inf	13Ω	11Ω	6.8Ω	0Ω	6.8KΩ		
V 8	6SN7GT	28KΩ	†33KΩ	1.5KΩ	260KΩ	100KΩ	100KΩ	3.5Ω	2Ω	
V 9	25L6GT	Inf	20Ω	†280Ω	†80Ω	†33KΩ	Inf	25Ω	40KΩ	
V 10	12SN7GT	■2.2Meg	†680KΩ	■0Ω	22KΩ	■10KΩ	2.2KΩ	20Ω	17Ω	
V 11	12BH7	#800Ω	#2.7Meg	9.1KΩ	12Ω	17Ω	#2.7Meg	510KΩ	50Ω	14Ω
V 12	6SN7GT	80KΩ	†120KΩ	1.2KΩ	4.9Meg	†8KΩ	1.2KΩ	2Ω	0Ω	
V 13	25BQ6GT	Inf	25Ω	†120KΩ	■0Ω	470KΩ	100KΩ	23Ω	0Ω	TOP CAP #22Ω
V 14	12AX4GT	Inf	#16Ω	160KΩ	Inf	†80Ω	#300KΩ	25Ω	27Ω	
V 15	1B3GT	PINS 1 THROUGH 8 HAVE IN RESISTANCE								TOP CAP #135Ω
V 16	14HP4F	3.5Ω	1.8KΩ	PIN 10 #14Ω	PIN 11 1.3Meg	PIN 12 5Ω	120KΩ			

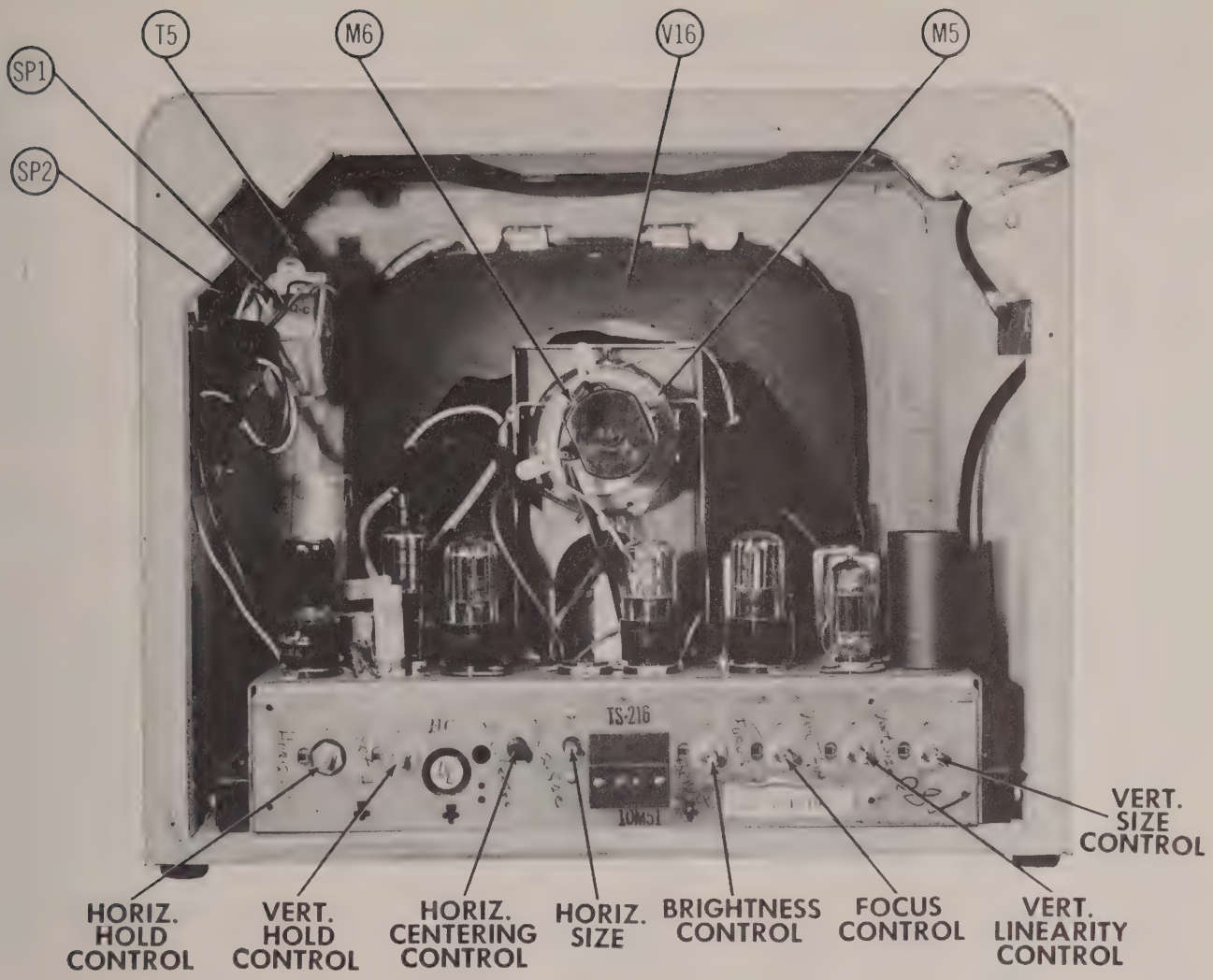
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM OUTPUT OF M2
# MEASURED FROM PIN 3 OF V14
■ MEASURED FROM PIN 8 OF V9



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal oscillator slug, (B1), to the center of the range over which the picture synchronizes horizontally

Adjust the horizontal size until the picture is slightly wider than necessary to fill the mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push-on type control knobs.
2. Remove 5 wood screws and rear cover.
3. Disconnect speaker, Remove speaker before removing chassis.
4. Remove 2 wood screws holding antenna terminal strip. Disconnect built-in antenna.
5. Remove 4 chassis bolts. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6CB6	6CB6	7CM	
V2	Converter	6U8	9AE		
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	Video Amp.	6AH6	6AH6	7BK	
V6	Sound IF Amp.	6AU6	6AU6	7BK	
V7	Ratio Det.	6AL5	6AL5	6BT	
V8	AF Amp.-Phase Det.	6SN7GT	6SN7GT	8BD	
V9	AF Output	25L6GT	25L6GT	7AC	
V10	Sync. Clipper Sync. Phase Inv.	12SN7GT	12SN7GT	8BD	
V11	Vert. Osc. Vert. Output.	12BH7	12BH7	9A	
V12	Horiz. HV	6SN7GT	6SN7GT	8BD	
V13	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V14	Damper	12AX4GT	12AX4GT	4CG	
V15	H.V. Rect.	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MOTOROLA PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V16	14BP4F			12L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	140	150	23B484097	AFEL-23		UPE15015		TVL-1428	Voltage Doubler
C2A	100	300	[illegible] *	E4C383					▲Filter *
B	200	150							■ Filter *
C	30	150							▲ Vert. Amp. Cathode *
C3	300	150	23B702779	AFE2-23		UPE101015		TVL-1431	▲Filter †
C4	5	150	23K710761	PRS150/4		BR415		TVA-1402	Decoupling †
C5	20	450	23K710667	PRS450/20		BR2045A		TVA-1709	Decoupling
C6	5	350	23A711003	PRS350/4		BR435		TVA-1601	Video Amp. Screen †
C7	10	50	23A90205	PRS50/10		BR105		TVA-1304	AF Amp. Cathode
C8	10	50	23A90205	PRS50/10		BR105		TVA-1304	Stabilizing
C9	220		21K77375	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	220		21K77375	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C11	220		21K400941	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C12	1500		21A701029	BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C13	1500		21A701029	BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Plate
C14	1500		21A701029	BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Screen
C15	22		[illegible]		TCN-22		N750K-220	5TCU-Q22	RF Amp. Cathode
C16A	800		21K400937	BPD-2X001	DD-2-102		612-001	5HK-2D1	RF Amp. Fil.
B	800								RF Amp. Fil.
C17	12		21K114073	SI12	D6-120		GP1K-120		RF Coupling
C18	.5-3		1X710954		829-3				Variable Trimmer
C19	1		21K114071		TCZ-1		N90K-010		Osc. Coupling
C20	18		[illegible]		TCZ-18		N90K-180		Osc. Grid Cap.
C21	.5-3		1X710954		829-3				Variable Trimmer
C22A	800		21K400937	BPD-2X001	DD-2-102		612-001	5HK-2D1	Osc. Fil.
B	800								Osc. Fil.
C23	1500		21A701029	BPD-0015	DD-152		801-0015	5HK-D15	RF Bypass
C24	1500		21A701029	BPD-0015	DD-152		801-0015	5HK-D15	Mixer Screen Bypass
C25	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer Plate Dec.
C26	1500		21A701029	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C27	1000		21K400936	BPD-001	DD-102	1W5D1	801-001	5HK-D1	1st Video IF Dec.
C28	1000		21K[illegible]	BPD-001	DD-102	1W5D1	801-001	5HK-D1	1st Video IF Fil.
C29	1000		21K[illegible]	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C30	1000		21K400936	BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd Video IF Dec.
C31	1000		21K400936	BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd Video IF Cathode
C32	1000		21K400936	BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd Video IF Fil.
C33	4		21K38951				N90K-040		AGC Filter
C34	.25	100	[illegible]	P488-25		GT2P25		2TM-P25	Video Coupling
C35	.1	100	8R9814	P288-1	DF-104	PTE4P1		2TM-P1	Video Amp. Screen
C36	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C37	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer Plate Dec.
C38	150		21R691948		TCN-150		N750L-151	5TCU-T15	Video Amp. Cathode
C39	30		21K470329		TCZ-30		N90L-300		Fixed Trimmer
C40	.1	400	[illegible]	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C41	2.2		21A478274		TCZ-2.2		N90K-2R2		Sound IF Coupling
C42	68		21R400928				N470L-680		Fixed Trimmer
C43	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Decoupling
C44	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C45	1000		21K400936	BPD-001	DD-102		801-001	5HK-D1	Ratio Det. Fil.
C46	470		21K400940	SI470	D6-471		GP2K-471	5GA-T47	Diode Load Cap.
C47	1000		[illegible]	SI1000	D6-102	1W5DI	GP2L-102	5HK-D1	Diode Load Cap
C48	1000		21K400936	SI1000	D6-102	1W5DI	GP2L-102	5HK-D1	De-emphasis
C49	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Audio Coupling
C50	5000		[illegible]	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Vol. Cont. Isolation
C51	.01	400	[illegible]	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Grid
C52	100		[illegible]	SI100	D6-101		GP1K-101	5GA-T1	Sync. Coupling
C53	.005	600	[illegible]	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Sync. Coupling
C54	22		[illegible]	SI22	D6-220		GP1K-220	5GA-Q22	Sync. Clipper Grid
C55	.05	400	[illegible]	P488-05	DF-503	PTE485		4TM-S5	Sync. Coupling
C56	.005	400	[illegible]	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Sync. Coupling
C57	.005	600	[illegible]	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.
C58	.01	600	[illegible]	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Integrator Net.
C59	.005	600	[illegible]	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Fixed Trimmer
C60	.05	400	8R490232	P488-05	DF-503	PTE485		4TM-S5	Vert. Sweep Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.05	400	8R490232	P488-05	DF-503	PTE485		4TM-S5	Vert. Discharge
C62	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Vert. Amp. Cathode
C63	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync. Coupling
C64	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sync. Coupling
C65	.001	600	[illegible]	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AFC Filter
C66	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Feedback
C67	47		21R6602	S147N750	TCN-47		N750K-470	5TCU-Q47	Horiz. Feedback
C68	.001	1000	8R9877	P1088-001		PTE16D1		MB-D1	Horiz. Feedback
C69	.002	600	8R9867	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Voltage Divider
C70	.001	600	[illegible]	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AFC Filter
C71	.01	400	[illegible]	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Filter
C72	220		21K77375	SI220	D6-221		GP2K-221	5GA-T22	Horiz. MV Plate †
C73	.005	600	8R9869	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Fixed Trimmer
C74	400	500	21R6664	1469-0004		5R5T4		MS-34	Horiz. MV Feedback
C75	680	500	21R2741	1479-0007		2R5T7		MS-37	Horiz. Feedback
C76	.01	200	8R9850	P288-01	D6-103	PTE4S1	GP2-333-103	2TM-S1	Horiz. Discharge
C77	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Horiz. Sweep Coupling
C78	68	3000	21K792762						Damper Filter

* Some models combine C2A, C2B, C2C and C6 in one unit. Both units carry the same part number. Specify the unit, model and suffix letter and part number when ordering.
† C3 and C4 are combined in one unit in some models (Part No. 23B710941).
‡ This item is changed to 100MFD and combined with C2 in some models.
¶ Some models use 100MMF in this application (Part No. 21B77286).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2500Ω	½	18A702444			Contrast Control - Tapped at 1500Ω - Panel
B	1 Meg	½				Volume Control & Switch - Rear
R2A	5.1Meg	½	18A702441		AG-85-S	Brightness Control - See Note 1
B	Shaft		Not Req.		RS-2	Attach to R2A per instructions
R3A	5 Meg	½	18A702443	Q11-141	AG-85-S	Vertical Size - See Note 2
B	Shaft		Not Req.	Not Req.	RS-2	Attach to R3A per instructions
R4A	750Ω	½	1 8A702475		AG-8-S	Vertical Linearity Control
B	Shaft		Not Req.		RS-2	Attach to R4A per instructions
R5A	850KΩ	½	18K711278	Q11-137	AG-61-S	Vertical Hold Control - See Note 3
B	Shaft		Not Req.	Not Req.	RS-2	Attach to R5A per instructions
R6A	100KΩ	½	18A702468	Q11-128	AG-49-S	Horizontal Hold Control - See Note 4
B	Shaft		Not Req.	Not Req.	RS-2	Attach to R6A per instructions
R7A	50Ω	½	18K710607			Horizontal Centering Control
B	Shaft		Not Req.			Attach to R7A per instructions
R8A	1Meg	½	18A711225	Q11-137	AG-61-S	Focus Control
B	Shaft		Not Req.	SQ	KSS-3	Attach to R8A per instructions

Note 1. Connect a 100KΩ resistor between the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from the shaft end, terminals down.).
Note 2. Connect a 1Meg resistor between the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from the shaft end, terminals down).
Note 3. Connect a 330KΩ resistor between the right hand terminal of the control and the lead connectin to the same terminal of the original control. (Controls viewed from the shaft end, terminals down).
Note 4. Connect a 39KΩ resistor between the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from the shaft end, terminals down).

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOROROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES All resistors ± 10% unless otherwise specified
R9	470KΩ 20%	½	6R6032		AGC Network
R10	22KΩ	½	6R6397	BTS-22K	RF Amplifier Grid
R11	33Ω	½	6R2036		RF Amplifier Cathode
R12	3300Ω 20%	½	[illegible]	BTS-3300	RF Amplifier Screen
R13	22KΩ	½	6R6397	BTS-22K	RF Coil Shunt
R14	15KΩ	½	6R2119	BTS-15K	Oscillator Grid
R15	1000Ω 20%	½	6R6301	BTS-1000	Oscillator Plate
R16	1000Ω 20%	½	6R6301	BTS-1000	Oscillator Plate Decoupling
R17	4700Ω 20%	½	[illegible]	BTS-4700	Mixer Grid
R18	100KΩ 20%	½	6R6075		Mixer Grid
R19	330KΩ 20%	½	6R6014		Mixer Screen
R20	220Ω 20%	½	6R3933	BTS-220	Decoupling
R21	1000Ω 20%	½	6R6301	BTS-1000	AGC Network
R22	6800Ω	½	6R6428	BTS-6800	IF Coil Shunt
R23	47Ω 20%	½	6R2108		1st Video IF Cathode
R24	1000Ω 20%	½	6R6301	BTS-1000	1st Video IF Screen
R25	8200Ω	½	6R2004	BTS-8200	IF Coil Shunt
R26	[illegible]	½	6R2035	BTS-82	2nd Video IF Cathode
R27	1000Ω	½	6R6301	BTS-1000	2nd Video IF Decoupling
R28	5600Ω	½	6R6117	BTS-5600	Video Detector Diode Load
R29	2.2Meg 20%	½	6R3927	BTS-2.2Meg	AGC Filter
R30	1Meg	½	[illegible]	BTS-1Meg	Video Output Grid
R31	33K	1	6R40102	BTA-33K	Video Output Screen
R32	4700Ω	2	6R5671	BTB-4700	Video Output Plate
R33	100Ω 20%	½	6R6018	BTS-100	Video Output Plate
R34	100KΩ 20%	½	6R6075	BTS-100K	Voltage Divider See Note 1.
R35	150Ω 20%	½	6R3992	BTS-150	Sound IF Cathode
R36	2200Ω 20%	½	6R6290	BTS-2200	Sound IF Decoupling
R37	120Ω	½	6R5551	BTS-120	Balancing See Note 2.
R38	6800Ω	½	6R6428	BTS-6800	Ratio Detector Diode Load
R39	6800Ω	½	6R6428	BTS-6800	Ratio Detector Diode Load
R40	33KΩ 20%	½	6R6012	BTS-33K	De-emphasis
R41	1500Ω	½	6R6038	BTS-1500	Audio Amplifier Cathode
R42	33KΩ	½	6R6410	BTS-33K	Audio Amplifier Plate
R43	10KΩ 20%	½	6R6054	BTS-10K	Isolation
R44	470KΩ 20%	½	6R6032	BTS-470K	Isolation

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R45	2.2Meg	½	6R3927	BTS-2.2Meg	1st Sync. Clipper Grid
R46	680KΩ	½	6R6238	BTS-680K	1st Sync. Clipper Plate
R47	22KΩ 20%	½	6R6028	BTS-22K	2nd Sync. Clipper Grid
R48	560KΩ	½	6R5697	BTS-560K	2nd Sync. Clipper Plate
R49	2200Ω	½	6R6069	BTS-2200	2nd Sync. Clipper Cathode
R50	6800Ω	½	6R6428	BTS-6800	2nd Sync. Clipper Plate
R51	3300Ω	½	6R5581	BTS-3300	2nd Sync. Clipper Plate
R52	22KΩ 20%	½	6R6028	BTS-22K	Integrator Network
R53	10KΩ 20%	½	6R6054	BTS-10K	Integrator Network
R54	2.2Meg 20%	½	6R3927	BTS-2.2Meg	Vert. Hold Control Shunt See Note 3.
R55	3300Ω	½	6R5581	BTS-3300	Vert. Peaking
R56	1800Ω	½	6R2089	BTS-1800	Picture Tube Grid
R57	8700Ω	3	21K710950		Vert. Output Cathode Wire-Wound
R58	120Ω	½	6R5551	BTS-120	Vert. Deflection Coil Shunt
R59	82KΩ	½	6R5644	BTS-82K	Horiz. Phase Detector Grid
R60	82KΩ	½	6R5644	BTS-82K	Horiz. Phase Detector Grid
R61	100KΩ	½	6R6075	BTS-100K	Horiz. Phase Detector Cathode
R62	100KΩ	½	6R6075	BTS-100K	Horiz. Phase Detector Plate
R63	4.7Meg	½	6R3123	BTS-4.7Meg	Horiz. AFC Filter
R64	150KΩ 20%	1	6R40053	BTA-150K	Horiz. AFC Feedback
R65	150KΩ 20%	1	6R40053	BTA-150K	Horiz. AFC Feedback
R66	5600Ω	½	6R6117	BTS-5600	Horiz. MV Plate
R67	1200Ω	½	6R6393	BTS-1200	Horiz. MV Cathode
R68	120KΩ	½	6R5631	BTS-120K	Horiz. MV Plate
R69	4700Ω	½	6R6080	BTS-4700	Horiz. Peaking
R70	470KΩ 20%	½	6R6032	BTS-470K	Horiz. Output Grid
R71	2200Ω 20%	½	6R6290	BTS-2200	Decoupling
R72	80Ω	10	17K711224		Filament Shunt - Wire Wound
R73	22Ω	3	17K710128		Series Filament
R74	29Ω	15	17K710668		Series Filament See Note 4.
R75	7.5Ω	5	17K711027	1 3/4A-7.5	Surge Limiter
R76	35Ω	10	17K711568	1 3/4A-35	Series Filament Wire Wound See Note 1

Note 1: Not used in all models.
Note 2: Some models may use a 180Ω resistor in this application.
Note 3: This resistor is used only when R5 is 1.3Meg.
Note 4: Special temperature coefficient resistor. Order replacement from manufacturer.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T1	52Ω	220Ω	25K732800	A-8111 ①	A-3000 ①	TB0-3 ①	Vert. Blocking Osc.
			25K702429 ②				
			25K710730 ②				
T2	120Ω	20Ω	24K711266				Horiz. Output Trans.
	Tapped ③ 18Ω	Sec. 2 0Ω					
T3	730Ω		25B702455		A-3081 ④		Vert. Output Trans.
	Tapped ⑤ 1Ω						
T4A	34Ω		24C702958	DY-10	MDF-30		Horiz. Deflection Coils
B	3.1Ω						Vert. Deflection Coils
			24C702655 ③				
			24C711217 ③				
			24C703260 ③				
			24K702857 ③				
			24K703262 ③				
			24C711236 ③				

Note 1. Drill one new mounting hole.
Note 2. Alternate vertical blocking oscillator transformer.
Note 3. Alternate deflection yoke.
Note 4. Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T5	2.3KΩ	3.2Ω	200Ω	.4Ω	25K710060	A-3876	A-2928	RO-2	

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	80Ω	3.2Ω	50C710019		6E80B ④	④ Remount Output Transformer.
	CONE DIA.	V. C. DIA.				
SP2	6"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

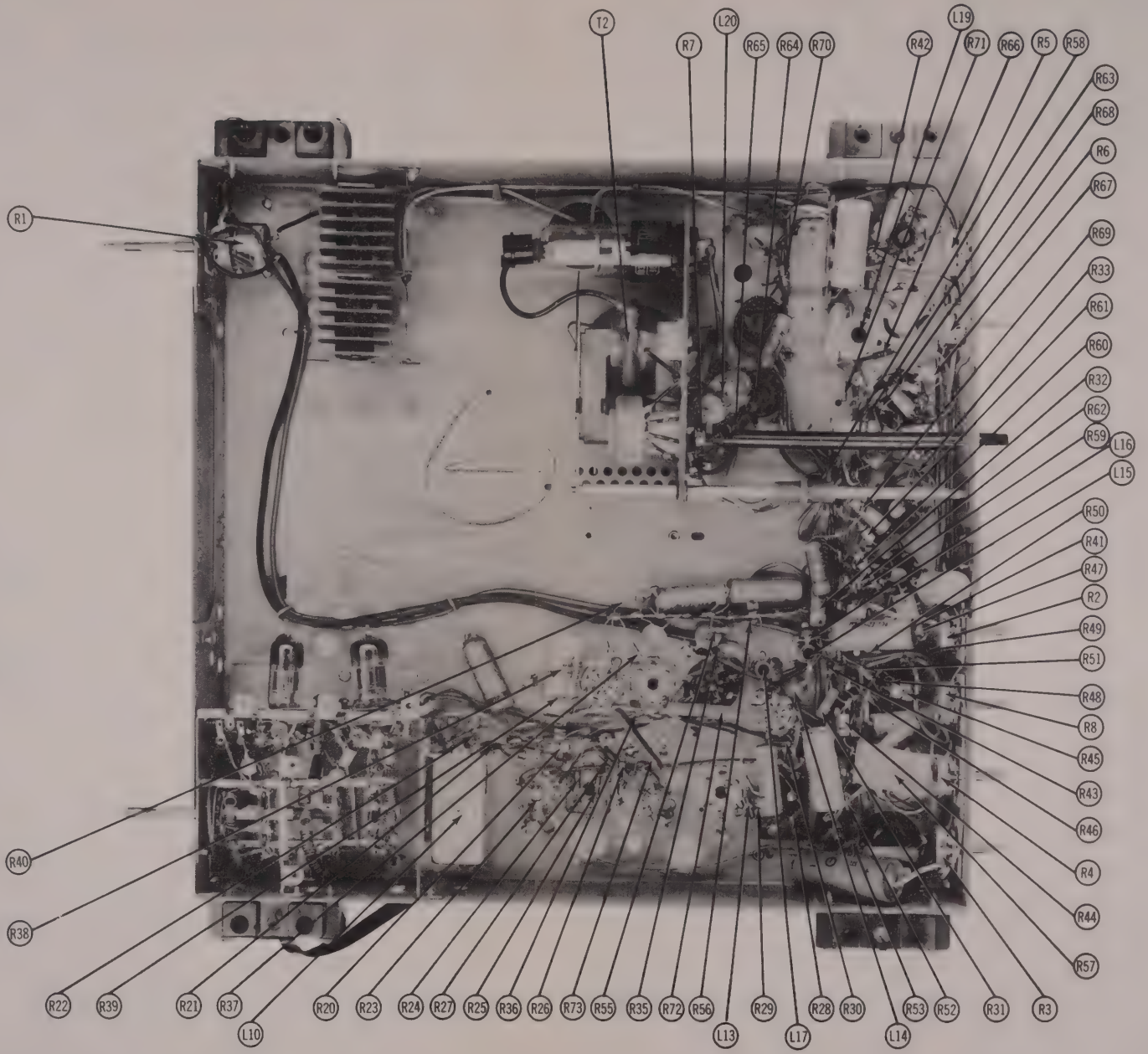
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Matching Coil.	0Ω		24A790033			
L2	Ant. Coils	0Ω		24K703079			Low Frequency
L3	Ant. Coils	0Ω		24K703078			High Frequency
L4	Ant. Coils	0Ω		24K703003			Channels 2 thru 6
L5	RF Coil	0Ω		24C703076			Channels 13
L6	RF Choke	3Ω		24K792577		CLA	3.3 Microhenries
L7	RF Coils	0Ω		24K703002			Channels 2 thru 6
L8	Osc. Coil	0Ω		24K703077			Channels 13
L9	Osc. Coils	0Ω		24C703001			Channels 2 thru 6
L10	lst. Video IF	.2Ω	.2Ω	24B702983			
L11	2nd. Video IF	.3Ω	.3Ω	24B702982			
L12	3rd. Video IF	.3Ω	.3Ω	24B702984			Includes Trap
L13	RF Choke	2.6Ω		24B703051			
L14	Peaking Coil	16Ω		24K703319			Green Dot, Wound on 6.8K Resistor
L15	4.5MC Trap	2.2Ω		1X792736			
L16	Peaking Coil	9.2Ω		24K710140			Red Dot
L17	Sound IF	1Ω		1X790341			
L18	Ratio Det. Trans.	2.6Ω	.4Ω	24B702543			Tap at .2Ω
L19	Horiz. Osc.	44Ω		24K701558			
L20	Horiz. Lin.	15Ω		24A710751			Wound on .15MF Cap.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.240ADC	48B700555	NH-5		
M2	.240ADC	48B700555	NH-5		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	RF Tuner	1X710744	Complete with Tubes
M4A	Crystal	48C711052	IN60
B	Crystal	48K711077	IN60
M5A	Centering Magnet	48B711242	
B	Centering Magnet	48B711241	Alternate
M6A	Ion Trap	24K703092	
B	Ion Trap	24A703090	Alternate
C	Ion Trap	24K703013	Alternate
	Knob	36B790505	Contrast
	Knob	36K792079	Off-On Volume & Fine Tuning.
	Knob	36B790506	Channel Selector



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHONOLA
MODEL TK-146B

PHONOLA
MODEL TK-146B

TRADE NAME	Phonola Model TK-146B	
MANUFACTURER	Waters Conley Co., Rochester, Minn.	
TYPE SET	AC Operated Audio Amplifier With Record Player	
TUBES (TWO)	Types 12AT6 AF Amp., 50C5 Audio Output	
POWER SUPPLY	110-120 Volts AC	RATING .42 Amp. @ 117 Volts AC

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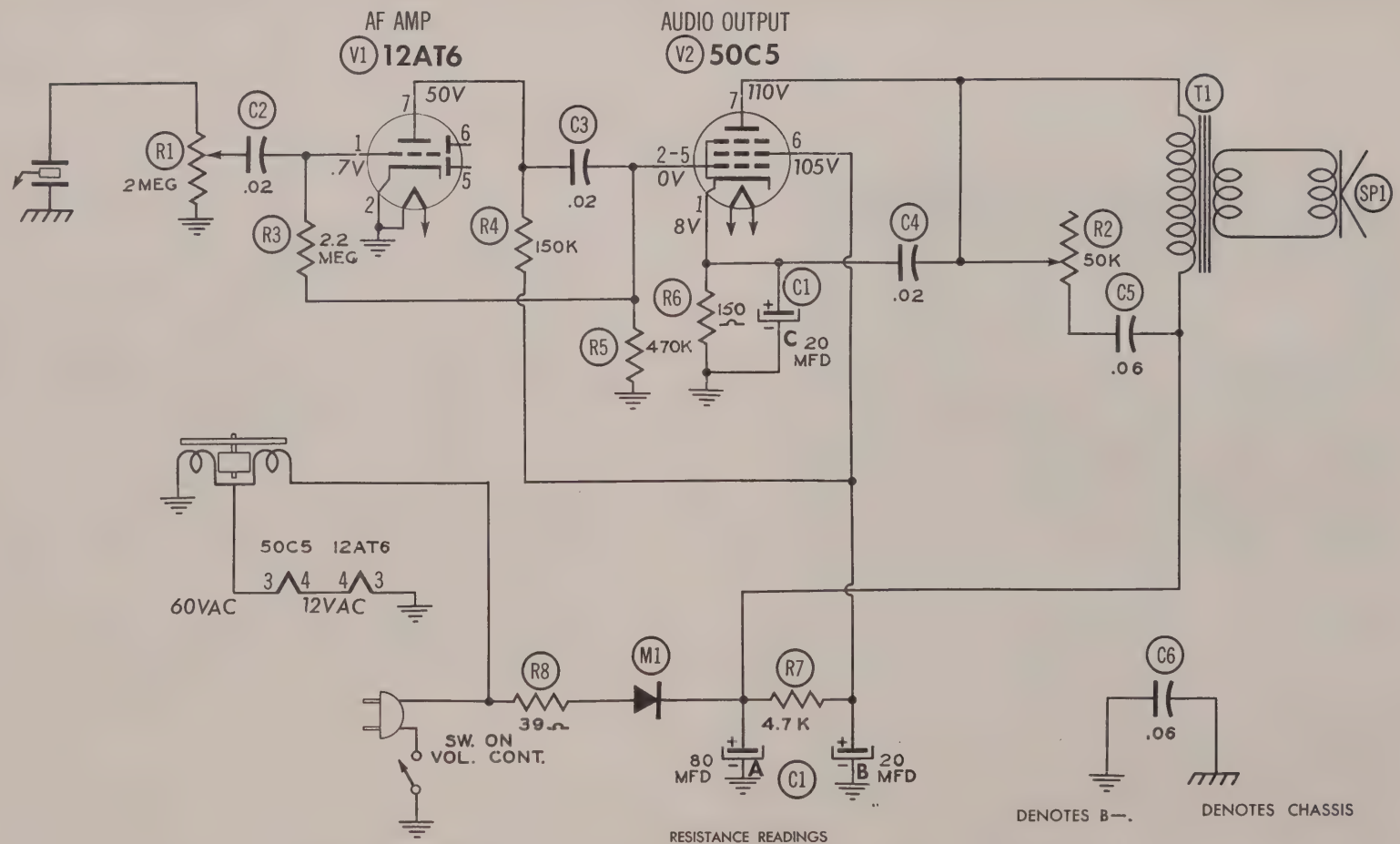

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AT6	2.7Meg	0Ω	0Ω	12Ω	Inf	Inf	†150KΩ
V 2	50C5	150Ω	470KΩ	14Ω	12Ω	470KΩ	†4.7KΩ	†340Ω

ALL CONTROLS SET FULLY COUNTER-CLOCKWISE
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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158-9

1 - DC Voltage measurements are at 20,000 ohms per volts, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All Controls at minimum, proper output load connected.

RCA VICTOR
MODEL 9EY3 (Ch. RS-132)

RCA VICTOR
MODEL 9EY3 (Ch. RS-132)

TRADE NAME	RCA Victor Model 9EY3 (Ch. RS-132)
MANUFACTURER	RCA Victor Div., Radio Corp. Of America. Camden, N.J.
TUBES (THREE)	Types 12AV6 AF Amp., 50C6 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .23 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

RCA
MODEL 9EY3

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AV6	12AV6	7BT	
V2	Audio Output	50C5	50C5	7CV	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	150	72281	AFH3-82		UP8415C			■Filter
B	40	150							▲Filter
C	20	25							Output Cathode
C2	.05	100	71702	P288-05	DF-503	PTE4S5		2TM-S5	Phono Isol ation
C3	680	500	39648	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	Tone Comp.
C4	.003	200	73961	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C5	.01	200	71923	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C6	.002	400	72839	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C7	.02	400	56871	P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C8	.05	400	71702	P488-05	DF-503	PTE4S5		4TM-S5	Line Isolation

CONTROLS

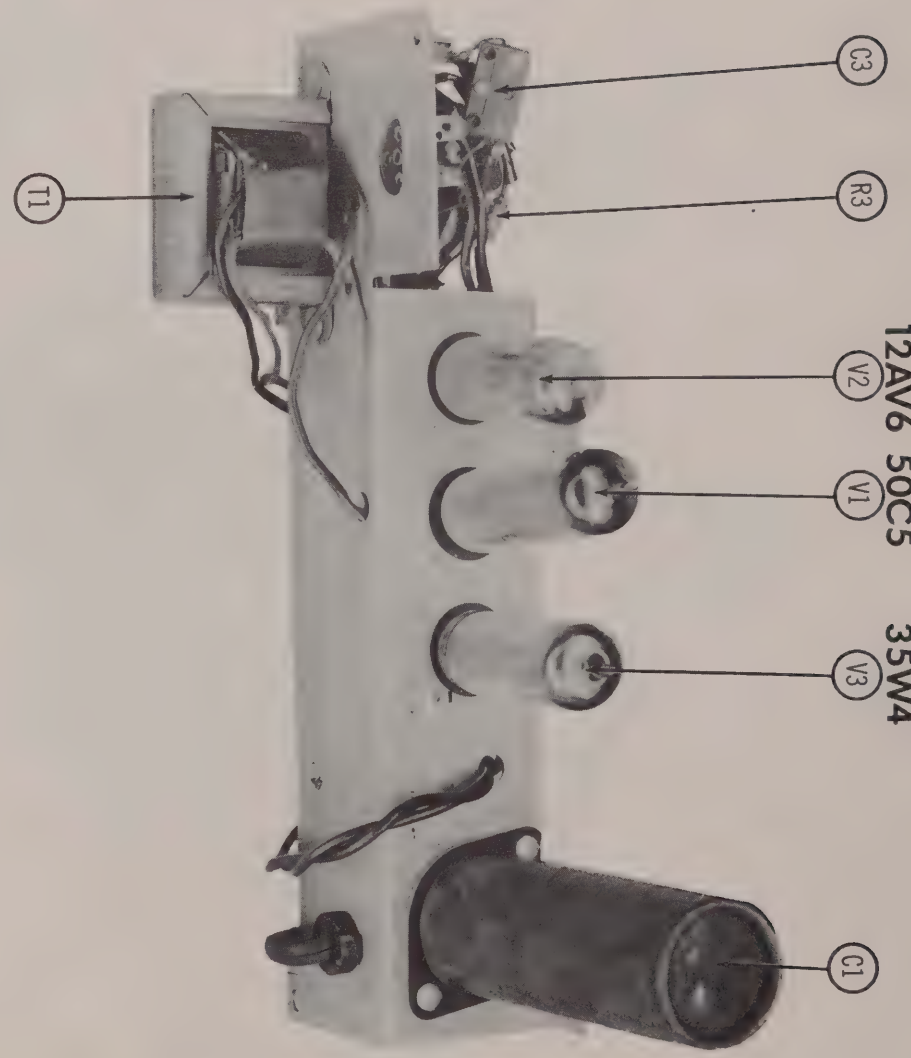
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2Meg	½	74133	Q13-139X	AT-115	BT-79-S	Volume Control (Tapped @ 500KΩ)
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.		
R2	470KΩ	½		BTS-470K	Phono Shunt	
R3	180KΩ	½		BTS-180K	Tone Compensation	
R4	120KΩ	½		BTS-120K	Tone Compensation	
R5	4.7Meg	½		BTS-4.7Meg	Audio Amplifier Grid	
R6	270KΩ	½		BTS-270K	Audio Amplifier Plate	
R7	470KΩ	½		BTS-470K	Audio Output Grid	
R8	150Ω	½		BTS-150	Audio Output Cathode	
R9	2700Ω	½		BTS-2700	Filter	See Note 1.
R10	33Ω	½	73237		Surge Limiter	See Note 2.
R11	120Ω	5	72314	1 3/4A-125	Series Filament Wire Wound	

Note 1. Some chassis may use 5600Ω in this application.
Note 2. Not used in chassis where Note 1 applies.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2KΩ	3.5KΩ	240Ω	.8Ω	72535	A-3876	A-2928	RO-2	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P. M.	3.5Ω	74165	ST-113 Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4in.	9/16 in.				

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	RCA PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	74067	CAC-J or AC-J	Q-33 A-1	W31AR	A53MG	34	0-1 or S-1	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

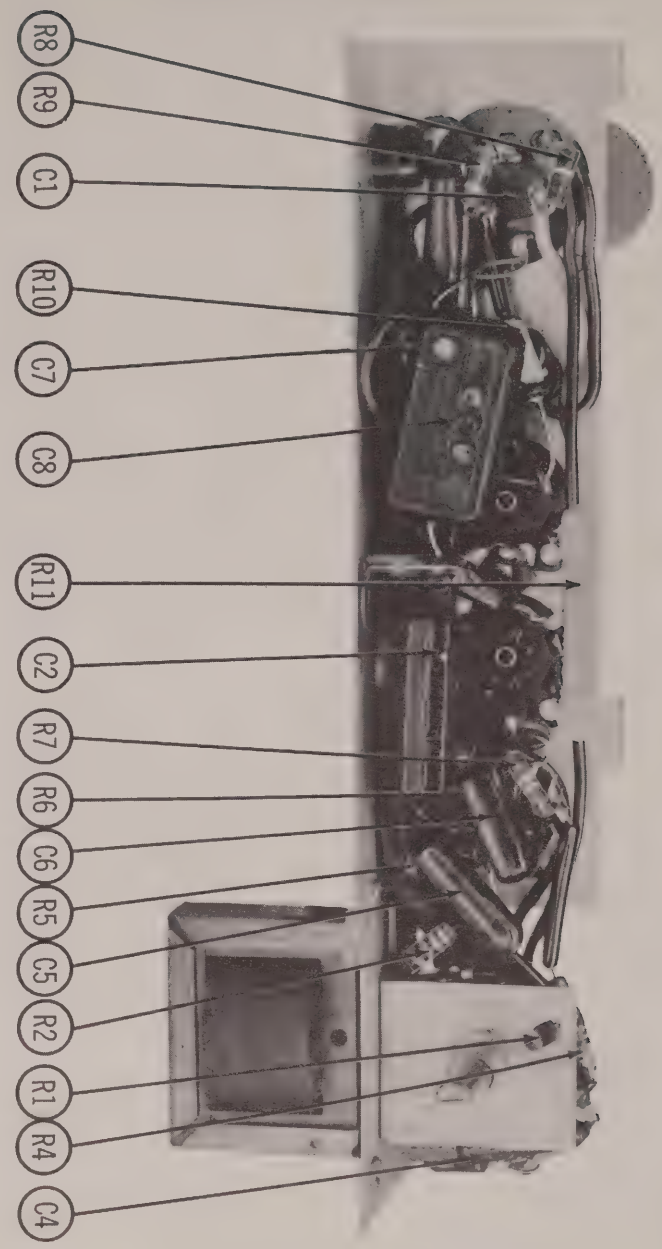
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA PART No.	WALCO PART No.	JENSEN PART No.	
M2	74068	W-42MGS	M-70LP	

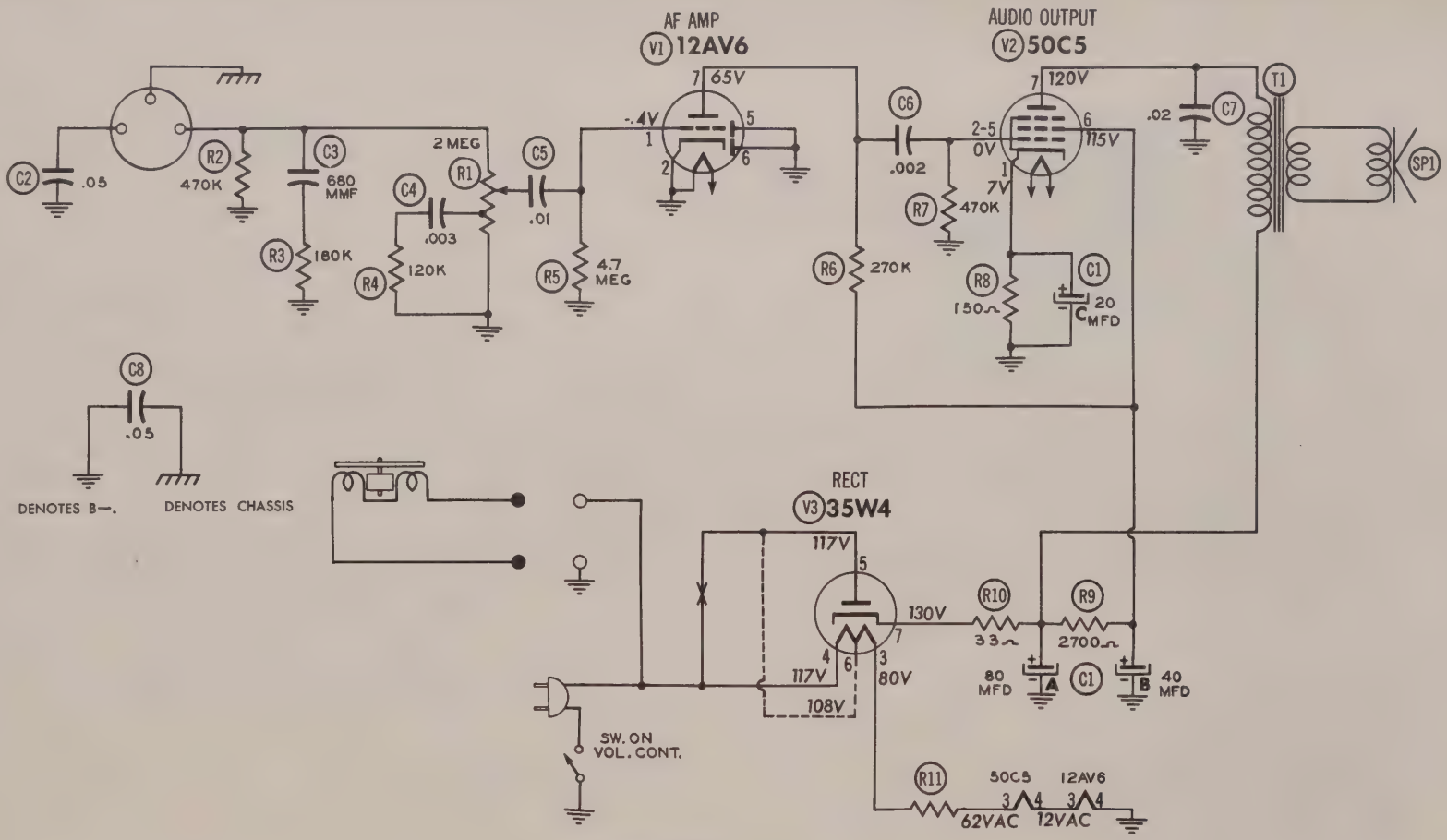
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
	Cabinet	Y2071	Plastic (Less bottom cover)
	Bottom Cover	74134	
	Button	74138	Reject (Includes Shaft)
	Knob	73490	Volume

CHASSIS—BOTTOM VIEW



RCA MODEL 9EY3



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AV6	4.7Meg	0Ω	12Ω	0Ω	0Ω	0Ω	†270KΩ
V 2	50C5	150Ω	470KΩ	62Ω	12Ω	470KΩ	†2.7KΩ	†270Ω
V 3	35W4	INF	100KΩ	182Ω	217Ω	217Ω	199Ω	100KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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158-10

1 - DC Voltage measurements are at 20,000 ohms per volts, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PHOTOFACT* Folder

RCA VICTOR MODELS 17T153, 17T155, 17T160, 17T174 (Ch. KCS66, A)

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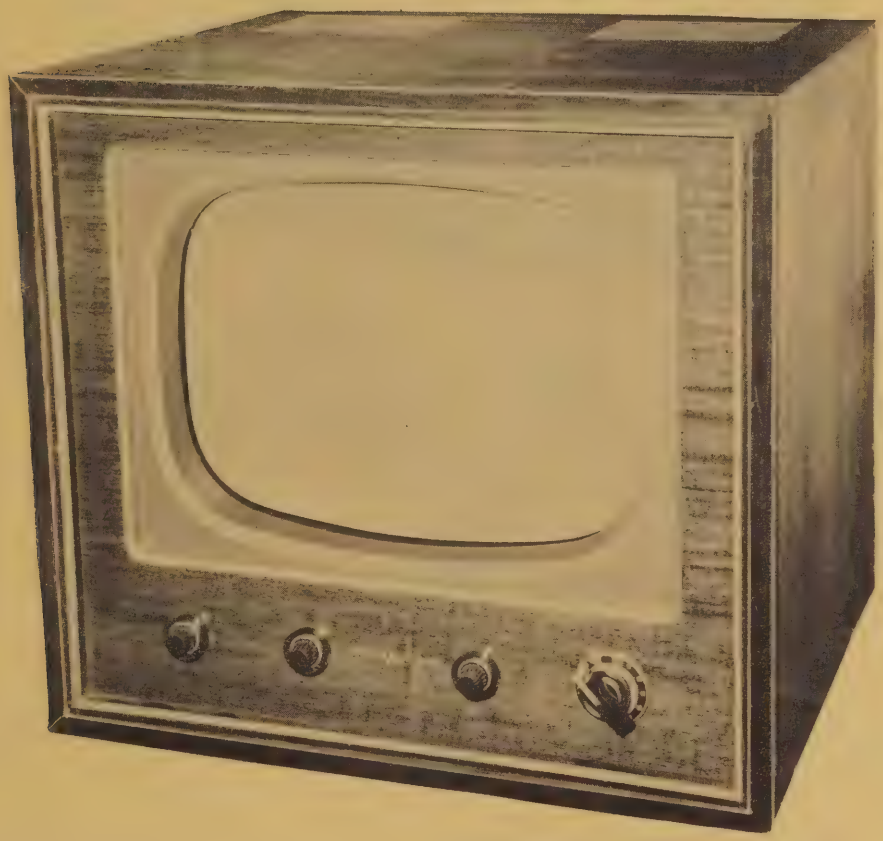

MODEL 17T155

RCA VICTOR MODELS 17T153, 17T155, 17T160, 17T174 (Ch. KCS66, A)

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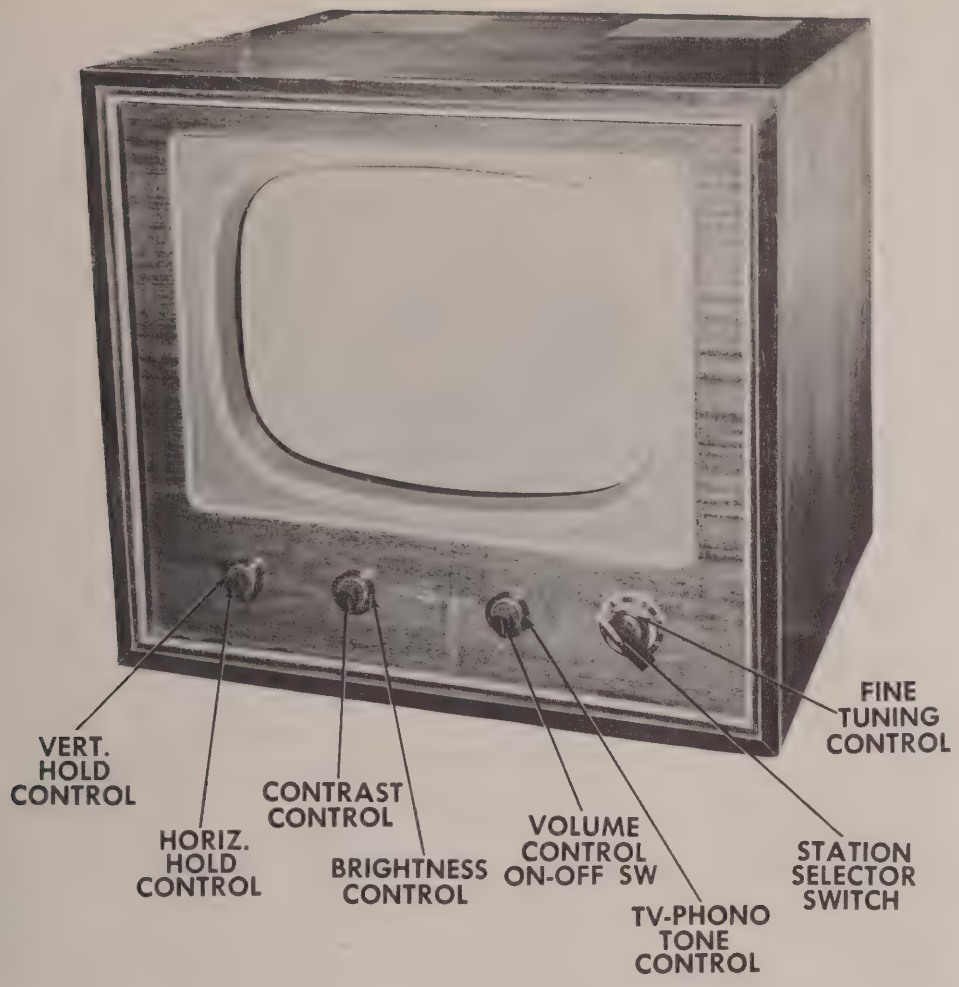
DATE 1–52 SET 158 FOLDER 11



RCA VICTOR MODELS 17T153, 17T155, 17T160, 17T174 (Ch. KCS66, A)

RCA VICTOR 17T155

TRADE NAME	RCA Victor Models 17T153, 17T155, 17T160, (Ch. KCS66), 17T174 (Ch. KCS66A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	Television Receiver
TUBES	Twenty Three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.7 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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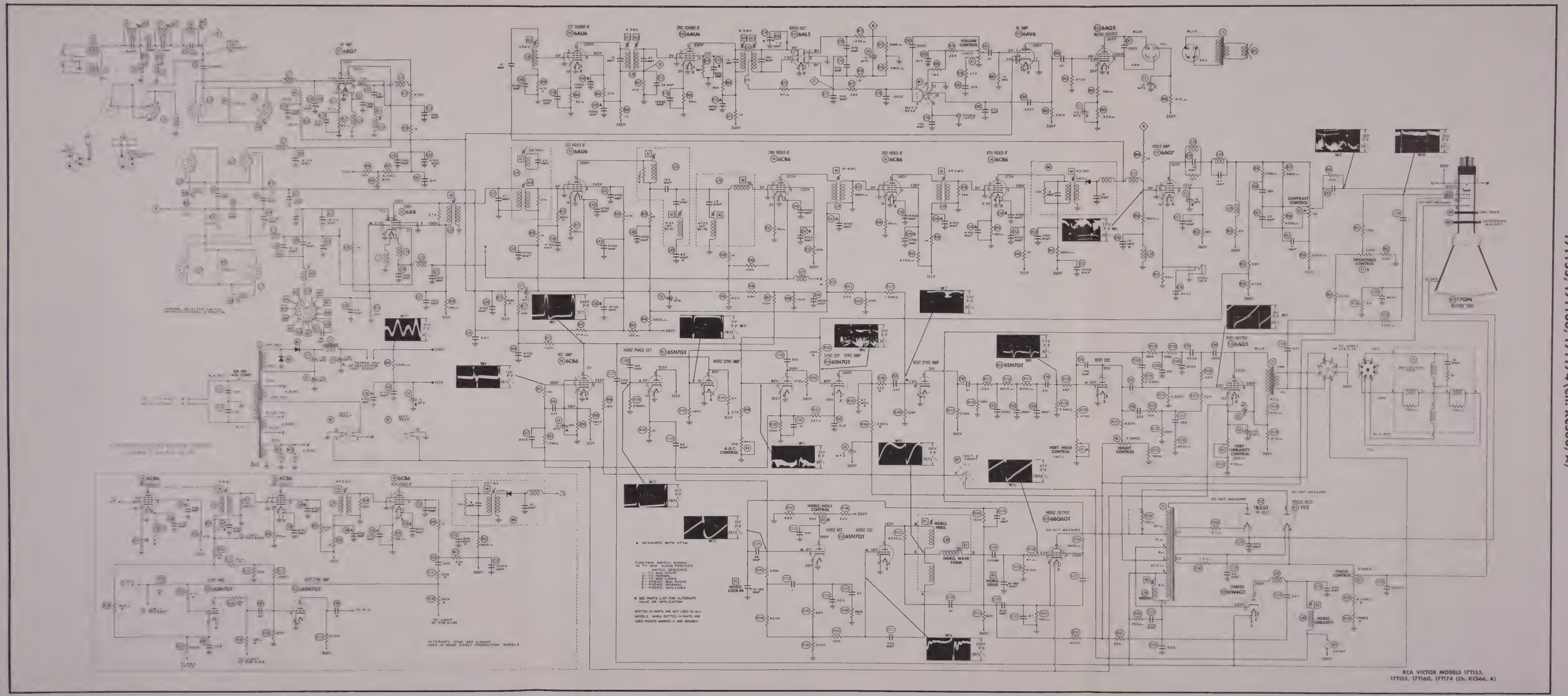
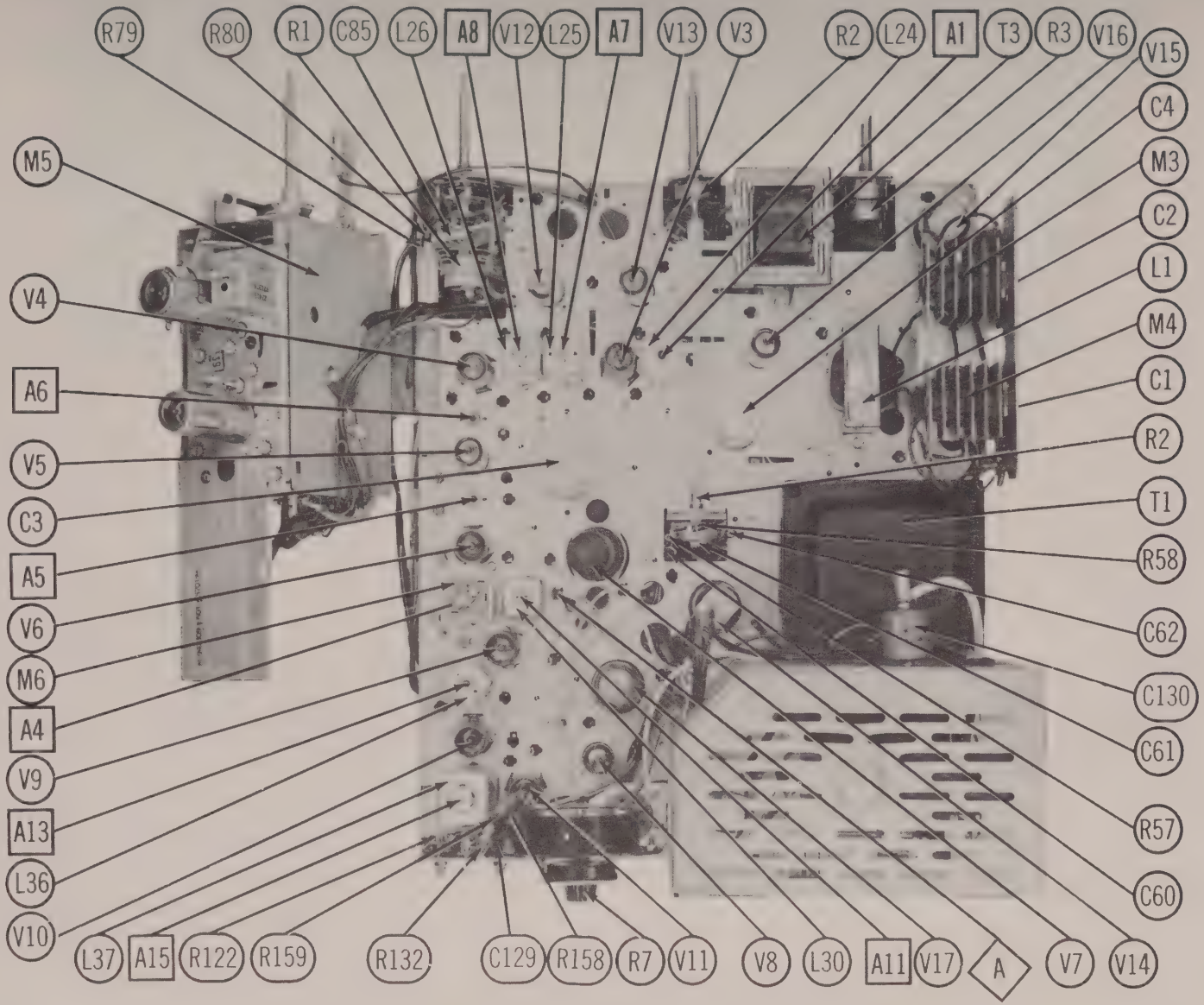


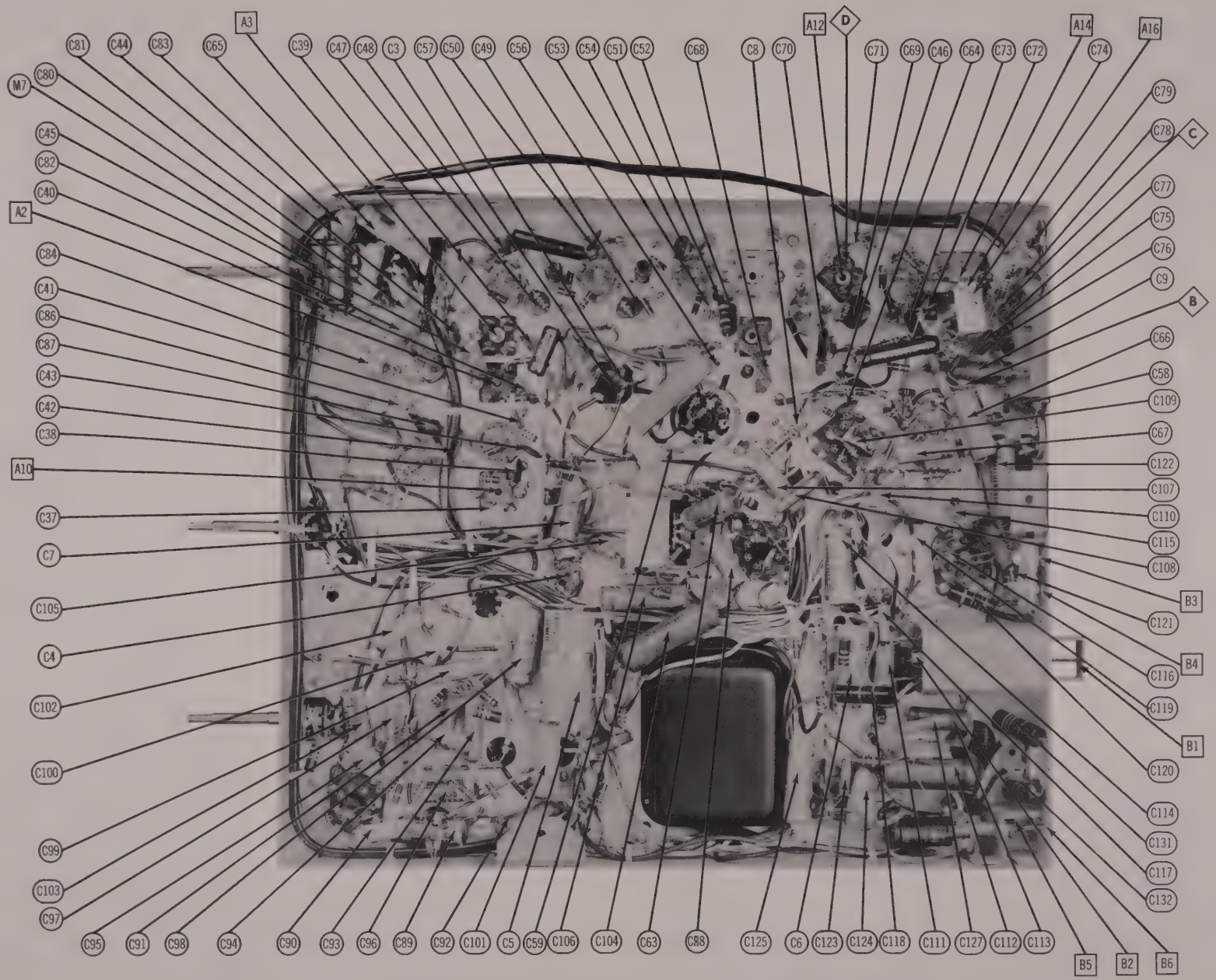
RCA VICTOR MODELS 171153, 171155, 171160, 171174 (Ch. KCS66, A)

RCA VICTOR MODELS 171153, 171155, 171160, 171174 (Ch. KCS66, A)



CHASSIS TOP VIEW

RCA VICTOR MODELS 17T153, 17T155, 17T160, 17T174 (Ch. KCS66, A)



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

BOTTOM VIEW

TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.

VIDEO IF ALIGNMENT

Connect the ends of a 1000Ω potentiometer across a 7.5 Volt battery capable of withstanding considerable current drain. Connect the positive end of the battery to chassis. Connect the center arm of the potentiometer to the junction of R95 & R96. Connect the synchronised sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to terminal "A" of L24. Low side to chassis.	Not Used	39.75MC	4	Use VTVM DC probe to point (A). Common to chassis.	A1	Set bias pot. to -1Volt. Adjust for MINIMUM deflection. Attenuate signal gen. to maintain -1Volt reading.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	"	"	47.25MC	"	"	A3	"
4.	"	"	"	43.7MC	"	"	A4	Adjust for maximum deflection. Attenuate signal gen. to maintain 1 volt reading.
5.	"	"	"	45.5MC	"	"	A5	"
6.	"	"	"	41.8MC	"	"	A6	"
7.	.005MFD	High side to pin 1 (grid) of 6AU6, (V3). Low side to chassis.	44MC (10MC Swp)	42.25MC 45MC 45.75MC 46.5MC	Any channel which causes no interference.	Vert. Amp. to point (A) Low side to chassis.	A7, A8	Connect 330Ω resistor across R37, R38 and terminals "A" and "F" of M6. Adjust for response curve similar to fig. 1. Attenuate sweep gen. to maintain .5 volt peak to peak response.
8.	Direct	High side to point F. Low side to chassis.	"	42.25MC 44.5MC	"	Vert. Amp. thru detector probe, (fig. 2) to pin 5 of 6AU6 (V3). Low side to chassis.	A9, A10	Leave 330Ω resistors connected. Connect a 180Ω resistor between pin 5 of V3 and junction of R39 and C40. Adjust for response similar to fig. 3.
9.	"	"	"	42.25MC 45MC 45.75MC	"	Vert. Amp. to point (A) Low side to chassis.		Remove all damping resistors. Set IF bias to -6 volts. Check for response curve similar to fig. 4. If necessary retouch A4 and A5 for proper response. Retouch A6 only if absolutely necessary. Incorrect adjustment of A6 will interfere with trap action.

SOUND IF ALIGNMENT

Connect the oscilloscope across the speaker voice coil to use as an output indicator. Turn the trimmer A16 for minimum capacity.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.005MFD	High side to pin 1 (grid) of 6AU6, (V10). Low side to chassis.	4.5MC (400% AM mod)	Any	DC probe to point (B). Common to chassis.	A14	Adjust for maximum deflection on VTVM. Adjust signal gen. to obtain 10 volt reading.
11.	"	"	"	"	"	A15	Adjust for MINIMUM 400% indication on scope. Repeat steps 10 and 11.
12.	"	"	"	"	DC probe to point (C). Common to chassis.	A16	Check the voltage at point (C). If the voltage exceeds ± 1.5 volts, adjust A16 for zero voltage on VTVM between positive and negative peaks. Repeat adjustment of A15 and A16 until VTVM reads less than ± 1.5 volts with A15 adjusted for MINIMUM 400% indication on scope.
13.	"	High side to point A. Low side to chassis.	4.5MC (1MC Swp)	"	USE SCOPE Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A17, A18 A19	Adjust for maximum amplitude and symmetry as per Fig. 5.

ANTENNA MATCHING UNIT ALIGNMENT

This unit has been properly aligned at the factory and is very stable. Alignment should not be attempted unless it has been definitely established that it is out of alignment and proper equipment is available to align it. The required equipment consists of a sweep generator capable of at least 1 volt output, and an oscilloscope with a sensitivity of at least .02 Volts per inch. Misalignment of this unit can cause serious attenuation of the signal especially on channel 2. Adjustment of the FM trap, (A43), however will not effect the alignment.
In the event of replacement of the antenna matching unit, the entire tuner should be realigned.
Disconnect the FM trap, L8, from the channel selector switch. The free end of L8 is alignment Point (E), as shown on the schematic.

14.	See Fig. 8	Across antenna terminals	Not used	45.75MC (400% AM Mod.)	Any	Vert. amp. thru detector probe to Point (E). Low side to chassis.	A17	Adjust for MINIMUM 400% indication or scope.
15.	"	"	"	41.25MC (400% mod.)	"	"	A18	Adjust for MINIMUM 400% indication or scope.
16.	"	"	50MC (10MC swp.)	50MC 52MC 53MC	"	"	A19, A20	Connect a 300Ω resistor from Point (D) to chassis. Adjust for response curve similar to Fig. 7. A19 controls the placement of the shoulder. A20 is adjusted to give maximum amplitude of .53MC marker consistant with curve shape shown in Fig. 7. Repeat steps 14, 15 & 16 until no further improvement can be made.

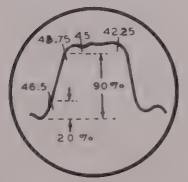


FIG. 1

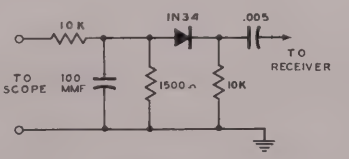


FIG. 2

FIG. 3

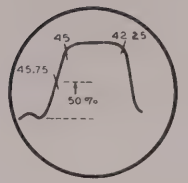


FIG. 4

FIG. 5

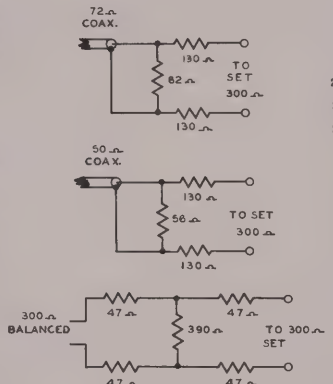


FIG. 6

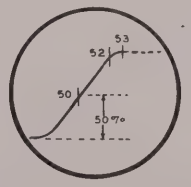


FIG. 7

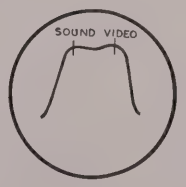


FIG. 8

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

If the tuner is operating and requires only touch up alignment the following pre-setting adjustments should not be performed. If the tuner is to be completely realigned pre-set all adjustments to the approximate center of their range with the following exceptions.
Pre-set A26 so the screw head is approximately 3/8 inch above the chassis. Turn A9 fully counter-clockwise. Set A23 one quarter turn from tight.
Do not change any adjustments on the antenna matching unit.
Disconnect the coax link from terminal "A" of L24. Connect a 39Ω carbon resistor across the open end of the link..
Connect a clip lead from the tuner AGC terminal, (terminal 3) to chassis.
During step 17 the signal generator is connected to the RF Amp. grid by means of a piece of small diameter wire slipped over Pin 7 of the tube, and the tube replaced in its socket. Connect the generator to the free end of the wire.
Set the fine tuning control 30 degrees clockwise from the mechanical center of its range.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	1500MMF	High side to pin 7, (grid) of 6BQ7, (V1). Low side to chassis.	Not used	43.5MC (400% mod)	2	Vert. Amp. to point (F). Low side to chassis.	A21	Adjust for MINIMUM 400% indication on scope. Remove the wire from pin 7 of V1.
18.	See fig. 8	Across antenna terminal	Not used	227MC (unmod)	8	Vert. Amp. thru detector probe to terminal 2 on tuner terminal strip.	A22	Adjust for zero beat indication on scope.
19.	"	"	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (F) Low side to chassis.	A23, A24 A25, A26	Adjust for response curve similar to fig. 8.
20.	"	"	Not used	129MC	6	Vert. Amp. thru detector probe to terminal 2 of tuner terminal strip.	A27	Adjust for zero beat indication on scope.
21.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (F) Low side to chassis.	A28, A29 A30	Adjust for response curve similar to fig. 8.
22.	"	"	Not used	Not used	"	USE VTVM DC Probe to point (F). Common to chassis.	A31	If 3.5 volt reading cannot be obtained adjust for maximum voltage which should exceed -2.5 volts.
23.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (F) Low side to chassis.		Check for response curve similar to fig. 8. If necessary retouch A28, A29 and A30 for proper response.
24.	Repeat step 18.							
25.	Repeat step 19.							
26.	Repeat step 23, If necessary repeat steps 16, 17, and 20 until no further adjustments are required.							
27.	See Fig. 6	Across antenna terminal.	Not used	257MC	13	Vert. amp. thru detector probe to terminal 2 of tuner terminal strip. Low side to chassis.	A32	Adjust for zero beat indication on scope, then overshoot the adjustment by turning the screw in the same direction, a little further than necessary to obtain zero beat. Adjust A22 to reset oscillator to proper frequency.
28.	"	"	213MC (10MC swp.) 207MC (10MC swp.) 201MC (10MC swp.) 195MC (10MC swp.) 189MC (10MC swp.) 183MC (10MC swp.) 177MC (10MC swp.)	211.25MC 215.75MC 205.25MC 209.75MC 199.25MC 203.75MC 193.25MC 197.75MC 187.25MC 191.75MC 181.25MC 185.75MC 175.25MC 179.75MC	13 12 11 10 9 8 7	Vert. amp. to Point (F). Low side to chassis.		Check all high band channels for response curve similar to Fig. 8. If markers fall below 80% on any channel, switch to channel 8 and retouch A23, A24, A25 and A26 (see step 17) Check the channel 8 oscillator frequency, (step 16). If necessary overshoot the adjustment of A22 and correct it by adjusting A32.
29.	Repeat Step 20							
30.	Repeat Step 19							
31.	See Fig. 6	Across antenna terminal.	85MC (10MC swp.) 79MC (10MC swp.) 69MC (10MC swp.) 63MC (10MC swp.) 57MC (10MC swp.)	83.25MC 87.75MC 77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	6 5 4 3 2	Vert. Amp. to Point (F). Low side to chassis.		Check the response curve shape on all low channels. Also check the oscillator injection voltage at Point (F), which should be between -2.5 and -5.5 volts. If channels 2, 3 and 4 show a similar tilt, overshoot the adjustment of A25 on channel 2 and correct it by adjusting A30 on Channel 6 for maximum amplitude between the markers. Also recheck channels 7 thru 13.
32.	See Fig. 6	Across antenna terminal.	Not used	257MC	13	Vert. amp. thru detector probe to terminal 2 on tuner term. strip. Low side to chassis.		Check the channel 13 oscillator frequency, if necessary adjust A22 to correct it.
33.	"	"	"	251MC 245MC 239MC 233MC 227MC 221MC 129MC 123MC 113MC 107MC 101MC	12 11 10 9 8 7 6 5 4 3 2	"	A33 A34 A35 A36 A37 A38 A27 A39 A40 A41 A42	Adjust for zero beat indication on scope. It should be possible to obtain zero beat on all channels with the fine tuning control 30 deg. clockwise of mechanical center.

Remove 39Ω Resistor and reconnect link from tuner. Recheck step 9 of Video IF Alignment and readjust A9.

FM TRAP ADJUSTMENT

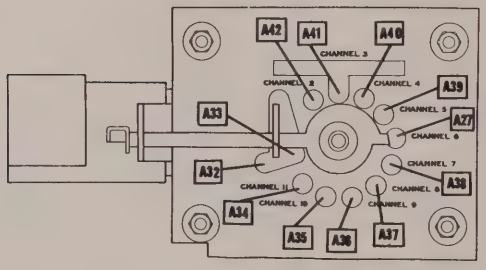
If interference from an FM station is encountered adjust the FM trap A43 to eliminate or minimize the interference. If channels 5 or 6 are active in the area, they should be checked to make sure the trap is not interfering with them.

RESISTANCE MEASUREMENTS

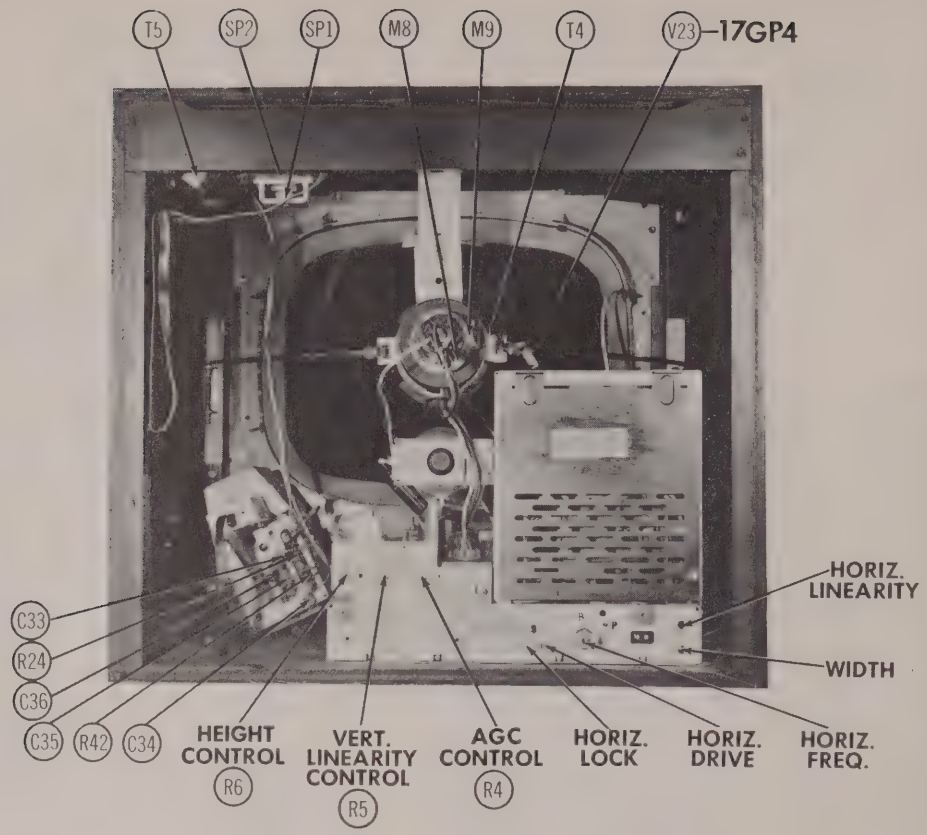
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	†1.6KΩ	8.2Meg	8.6Meg	0Ω	.1Ω	8.6Meg	170K	130Ω	0Ω
V 2	6X8	0Ω	100KΩ	†12KΩ	.1Ω	.2Ω	0Ω	100KΩ	†2.6KΩ	†2.6KΩ
V 3	6AU6	60KΩ	0Ω	0Ω	.1Ω	†6.6KΩ	†47KΩ	100Ω		
V 4	6CB6	60KΩ	56Ω	0Ω	.1Ω	†6.6KΩ	†47KΩ	0Ω		
V 5	6CB6	.2Ω	68Ω	.1Ω	0Ω	†3.5KΩ	†7.2KΩ	0Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	†6.8KΩ	†3.5KΩ	0Ω		
V 7	6AG7	0Ω	0Ω	0Ω	3.9KΩ	43Ω	†18KΩ	.1Ω	†6KΩ	
V 8	6CB6	1.5Meg	7KΩ	.1Ω	0Ω	225KΩ	†12KΩ	7KΩ		
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1KΩ	†28KΩ	82Ω		
V 10	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1KΩ	†16KΩ	68Ω		
V 11	6AL5	7.8KΩ	8KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 12	6AV6	10Meg	0Ω	.1Ω	0Ω	170KΩ	170KΩ	†330KΩ		
V 13	6AQ5	470KΩ	660Ω	0Ω	.1Ω	†880Ω	†510Ω	470KΩ		
V 14	6SN7GT	17KΩ	†1.2KΩ	150KΩ	115KΩ	#1.1Meg	370KΩ	.1Ω	0Ω	
V 15	6SN7GT	510KΩ	#1.8Meg	0Ω	120KΩ	†270KΩ	0Ω	0Ω	.1Ω	
V 16	6AQ5	2.2Meg	550Ω	0Ω	.1Ω	†1.3KΩ	†510Ω	2.2Meg		
V 17	6SN7GT	3.9Meg	†2.5KΩ	1KΩ	1Meg	†14KΩ	0Ω	0Ω	.1Ω	
V 18	6SN7GT	1.5Meg	†18KΩ	410KΩ	480KΩ	†82KΩ	0Ω	0Ω	.1Ω	
V 19	6BQ6GT	Inf.	0Ω	Inf.	†6.8KΩ	470KΩ	Inf.	.1Ω	180Ω	TOP CAP #13Ω
V 20	6W4GT	Inf.	Inf.	280KΩ	Inf.	†60Ω	Inf.	#17Ω	#17Ω	
V 21	1V2	PINS 1 THROUGH 8 HAVE INF RESISTANCE								#113Ω
V 22	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #170Ω
V 23	17GP4	■.6Ω	†250KΩ	PIN 10 #56KΩ	PIN 11 †150KΩ	PIN 12 ■.0Ω	PIN 6 30Meg			

ALL MEASUREMENTS TAKEN IN TV POSITION ONLY
ALL CONTROLS SET FOR NORMAL OPERATION
† MEASURED FROM OUTPUT OF M1
■ MEASURED FROM 155 VDC LINE



OSCILLATOR ADJUSTMENTS



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
If the picture cannot be synchronized with the horizontal hold control, turn the hold control to the center of its range and adjust the horizontal frequency slug, (B1), If adjustment of B1 will not synchronize the picture , turn the waveform slug, (B2), several turns out (counter-clockwise) and readjust B1.
Examine the width and horizontal linearity of the picture. If they are not approximately correct adjust the horizontal drive, width, and linearity as outlined under HORIZONTAL DRIVE, WIDTH AND LINEARITY ADJUSTMENT.
Connect the low capacity probeof an oscilloscope to terminal C of L38.
Adjust the waveform slug, (B2), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in fig. 9.
If necessary during adjustment of B2, readjust B1 to keep the picture synchronized.
Turn the horizontal hold control to fully counter-clockwise, and momentarily interrupt the signal by switching to another channel and back again. If the picture is not out of synchronization turn B1 slightly and repeat the signal interruption until the picture is out of sync. and shows several bars sloping downward to the left.
Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture pulls into synchronization.
If more than three bars are present adjust the locking range trimmer, (B3), slightly clockwise, if less than two bars are present adjust B3 slightly counter-clockwise.
Repeat the check and adjustment fo B3 until 2 to 3 bars are present at the pull-in point.
Turn the horizontal hold control to fully clockwise.
Adjust B1 until one bar, sloping downward to the right, appears in the picture. Then back off B1 until the bar just moves off the picture leaving the picture in sync.

HORIZONTAL DRIVE, WIDTH, AND LINEARITY ADJUSTMENTS

Adjust the horizontal drive trimmer, (B4), counter-clockwise until the picture begins to crowd up and fold over near the center. Then back off the trimmer until thecrowding just disappears.
Adjust the horizontal linearity slug, (B5), clockwise until the picture begins to "wrinkle" on the right side. Then back off until the "wrinkle" just disappears and best linearity is obtained.
Adjust the width slug, (B6), until the picture is slightly wider than necessary to fill the mask horizontally.
Since all of these controls are interacting it may be necessary to adjust them alternately to obtain best results.
Recheck the horizontal oscillator adjustment after making these adjustments.

AGC THRESHOLD ADJUSTMENT

Tune in a strong signal.
Momentarily interrupt the signal by switching to another channel and back again. If the picture reappears immediately the AGC adjustment is correct.
If the picture takes an appreciable portion of a second to return or shows excessive bending the AGC control should be adjusted as follows.
Turn the AGC control to fully counter-clockwise. The raster may be bent slightly, this should be disregarded at this time.
Turn the control clockwise until there is a very slight bend, or change of bend in the raster. Then turn counter-clockwise just enough to remove the bend or change of bend.
If only a weak signal is available adjust the control for best signal to noise, (snow), ratio.

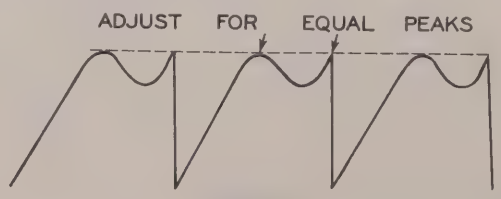
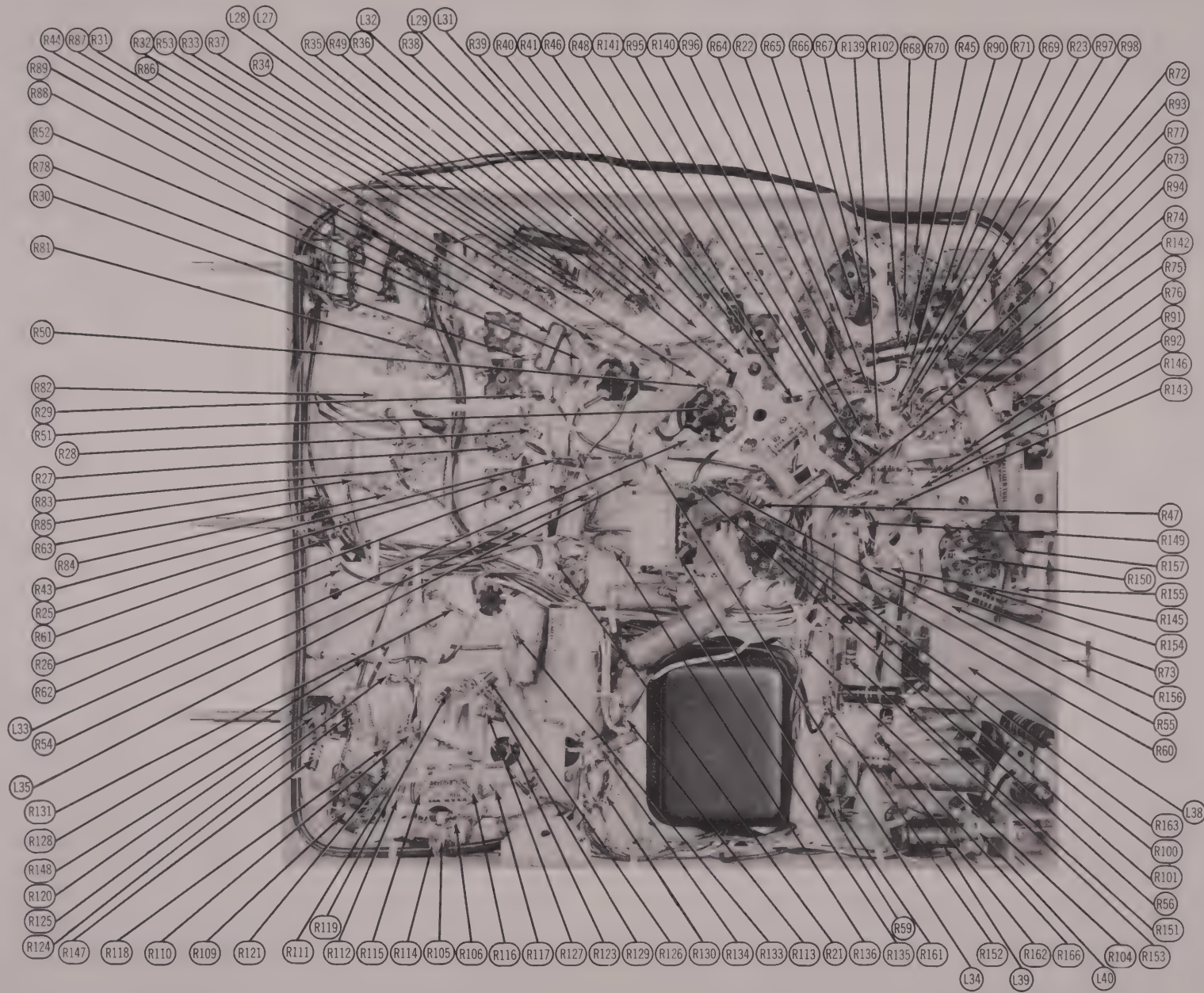


FIG. 9



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6X8	6X8		
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Amplifier	6AG7	6AG7	8Y	
V8	AGC Amplifier	6CB6	6CB6	7CM	
V9	1st Sound IF Amp.	6AU6	6AU6	7BK	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier AGC Clamp	6AV6	6AV6	7BT	
V13	Audio Output	6AQ5	6AQ5	7BZ	
V14	Sync, Seperator Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V15	Vert. Sync. Amp. - Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Vert. Output	6AQ5	6AQ5	7BZ	
V17	Horiz. Sync. Amp, Horizontal Phase Detector	6SN7GT	6SN7GT	8BD	
V18	Horizontal AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	6W4GT	6W4GT	4CG	
V21	Focus Rectifier	1V2	1V2	9U	
V22	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RCA PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V23	17GP4				

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	150	200	75220	AFH2-35		UPE15020		TVL-1540	Voltage Doubler
C2	150	200	75220	AFH2-35		UPE15020		TVL-1540	Voltage Doubler
C3A	100	350	76451			UPT419			●Filter
B	10	350							■Video Amp. Screen
C	10	350							▲Audio Output Dec.
D	20	50							Audio Output Cathode
C4A	10	350	75218	AFH3-112		UPT316		TVL-3638	■Decoupling
B	5	350							▲Decoupling
C	150	50							Vert. Output Cathode
C5	30	350	76450	PRS450/30		BR3035		TVA-1610	Vert. Output Dec.
C6	5	450	28417	PRS450/4		BR445		TVA-1702	Decoupling
C7	2	50	73747	PRS150/4		BBR2-50T		TVA-1301	AGC Filter
C8	2	50	73747	PRS150/4		BBR2-50T		TVA-1301	AGC Filter
C9	5	50	74521	PRS150/4		BR550		TVA-1303	Stabilizing
C10	18		54204		TCZ-18		NP0K-180		Fixed Trimmer
C11	5		93056	SI5			GP1K-050		RF Coupling
C12	27		70835		TCZ-27		NP0K-270		Fixed Trimmer
C13	33		76739		TCN-33		N750K-330	5TCU-Q33	Fixed Trimmer
C14	22		76557		TCZ-22		NP0K-220	5TCC-Q22	RF Coupling
C15	1500		73748	BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C16	1-4		76532		829-4				Variable Trimmer
C17	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Amp. Cathode
C18	1500		73748	BPD-0015	DD-152		801-0015	5HK-D15	RF Bypass
C19	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C20	8		70597				NP0K-080		Fixed Trimmer
C21	1500		73748	BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Fil.
C22	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C23	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C24	330		76552	SI330	D6-331		GP2K-331	5GA-T33	RF Coupling
C25	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C26	22		76558	SI22N080			N080-331-220		Osc. Grid Cap.
C27	.68		71088		TCZ-.68		NP0K-R68		Fixed Trimmer
C28	12		76550				N080-331-120		Osc. Feedback
C29	.8-1.4		76545		829-3				Variable Trimmer
C30	1500		75166	SI1500	D6-152		GP2L-152	501C1	Conv. Fil.
C31	1500		75166	SI1500	D6-152		GP2L-152	501C1	Fil. Bypass
C32	1500		75610	SI1500	D6-152		GP2L-152	5HK-D15	RF Bypass
C33	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass *
C34	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AGC Filter
C35	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	RF Bypass
C36A	4700		76470	BPD-005	DD-2-502	1D5D5	811-005	5HK-2D47	RF Bypass
B	4700			BPD-005		1D5D5	811-005		RF Bypass
C37	27		72570		TCN-27		N750K-270		Fixed Trimmer
C38	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AGC Filter
C39	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AGC Filter
C40	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass
C41	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st. Video IF Screen
C42	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st. Video IF Fil.
C43	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass
C44	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	RF Bypass
C45	82	1000	71514						Fixed Trimmer *
C46	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AGC Filter
C47A	4700		76470	BPD-005	DD-2-502	1D5D5	811-005	5HK-2D47	2nd. Video IF Plate
B	4700			BPD-005		1D5D5	811-005		2nd. Video IF Screen
C48	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	2nd. Video IF Fil.
C49A	4700		76470	BPD-005	DD-2-502	1D5D5	811-005	5HK-2D47	3rd. Video IF Plate
B	4700			BPD-005		1D5D5	811-005		3rd. Video IF Screen

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C50	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	3rd. Video IF Fil.
C51	1500		75166	SI1500	D6-152	1W5D15	GP2L-152	501C1	4th. Video IF Plate
C52	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	RF Bypass
C53	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	4th. Video IF Screen
C54A	4700		76470	BPD-005	DD-2-502	1D5D5	811-005	5HK-2D47	4th. Video IF Cathode
B	4700			BPD-005		1D5D5	811-005		4th. Video IF Fil.
C55	.033	600		P688-033		PTE6S3		6TM-S3	Noise Pulse Coup.
C56	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer *
C57	100		75437	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Video Amp. Screen
C58	.0033	600	73795	P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	Video Amp. Cathode
C59	10		31709	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C60	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Contrast Cont. Shunt
C61	33		38868		TCN-33		N750K-330	5TCU-Q33	Contrast Cont. Shunt
C62	7		76471				N750K-070		Contrast Cont. Shunt
C63	.1	200	78784	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C64	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	AGC Filter
C65	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	RF Bypass
C66	.047	200	73558	P288-047	DF-503	PTE4S5		2TM-S47	AGC Filter
C67	.0015	600	73598	P688-0015	D6-152		GP2L-152	6TM-D15	AGC Filter
C68	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. Sound IF Grid
C69A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st. Sound IF Plate
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st. Sound IF Screen
C70	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. Sound IF Cathode
C71	56		71924		TCN-56		N750L-560		2nd Sound IF Grid
C72A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	2nd Sound IF Plate
B	10000			BPD-01		1D3S1	821-01	5HK-S1	2nd Sound IF Screen
C73	10000		73960	BPD-01		1D3S1	821-01	5HK-S1	2nd Sound IF Cathode
C74	1-4		76532		829-4				Variable Trimmer *
C75	470	500	39644	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Diode Load Cap.
C76	470	500	39644	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Diode Load Cap
C77	330	500	76473	1468-00035	D6-331		GP2K-331	1FM-335	RF Bypass
C78	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	De-emphasis
C79	100		39396	SI100N750	TCN-100		N750L-101	5TCU-T1	Tone Comp.
C80	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C81	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C82	.015	200	73797	P288-015		PTE6S15		6TM-S15	Tone Comp.
C83	.015	200	73797	P288-015		PTE6S15		6TM-S15	Tone Comp.
C84	.0027	600	73599	P688-003	D6-272	PTE6D3	GP2-333-272	6TM-D3	Tone Comp.
C85	270		47617	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	Tone Comp.
C86	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C87	.0033	600	73795	P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	Audio Output Plate
C88	.022	400	73562	P488-022	DF-203	PTE4S2		4TM-S22	Vert. Sync. Sep. Cathode
C89	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Sync. Coupling
C90	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Sync. Coupling
C91	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Vert. Integrator Net.
C92	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C93	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C94	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Vert. Integrator Net.
C95	390	500	73094	1469-0004		5R5T5		MS-34	Vert. Feedback
C96	.033	600	73596	P688-033		PTE6S3		6TM-D3	Vert. Discharge
C97	.1	600	73557	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C98	.022	600	73798	P688-022	DF-203	PTE6S2		6TM-D22	Vert. Feedback Net.
C99	.0022	1000	73803	P1088-0022		PTE16D2		MB-D22	Vert. Feedback Net.
C100	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Vert. Feedback Net.
C101	.068	200	73792	P288-068				4TM-S68	Vert. Feedback Net.
C102	.001	1000	73801	P1088-001		PTE16D1		MB-D1	Vert. Feedback Net.
C103	.1	200	78784	P288-1	DF-104	PTE4P1		2TM-P1	Vert. Feedback Net.
C104	.047	1000	73564	P1088-047		GT16S5		MB-S5	Vert. Sweep Coupling
C105	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Integrator Network
C106	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C107	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. Sync. Sep. Cathode
C108	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C109	100			SI100N750	TCN-100		N750L-101	5TCU-T1	Horiz. Sync. Coupling
C110	82	500	76474						Horiz. Sync. Coupling
C111	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	AFC Plate
C112	.47	200	73787	P288-47		GT2P5		2TM-P47	AFC Filter
C113	.022	400	73562	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C114	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	AFC Filter
C115	68	1000	76475						Horiz. Feedback
C116	12		33380		TCN-12		N750K-120		Horiz. Feedback
C117	330	1000	76476						Horiz. Osc. Grid Cap.
C118	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C119	820	500	76477						Horiz. Discharge
C120	.00068	600	76479						Horiz. Sweep Coupling
C121	.1	600	73557	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C122	.27	200	73786	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C123	330	1000	76476						Fixed Trimmer
C124	.022	1000	73810	P1088-022		PTE16S2		MB-S22	Damper Filter
C125	.027	1000	73811	P1088-03		PTE16S3		MB-S3	Damper Filter
C126	270	1000	73091						Damper Filter
C127	220		76673	SI220	D6-221		GP2K-221	5GA-T22	Horiz. Feedback
C128	56	7000	76384						Focus Rect. Filter
C129	.00025	12500	75250	15084-00025				12TVM-325	Focus Rect. Filter
C130	500	20000	76461	HV-20C	TV3-502				HV Filter
C131	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C132	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter

* Not Used In All Models

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	1.5Meg	½	76171		AT-95		Volume Control & Switch See Note 1
	Shaft				FKS-1/4		
R2A	15kΩ	½	76445				Contrast Control - Panel
B	200kΩ	½	76444				Brightness Control - Rear
R3A	1Meg	½		Concentrikit			Vertical Hold Control - Panel
B	50kΩ	½	76443	B11-137 *			Horizontal Hold Control - Rear
C	Shaft End	½		E 187 *	RTV-136	SBB-588	Attach per instructions in "Concentrikit"
R4A	50kΩ	½	76447	Q11-123	AG-44-S	AN-31	AGC Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	1500	½	76449		AG-11-S	AN-6	Vertical Linearity Control
B	Shaft				FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	76448	Q11-129	AG-84-S	B-83	Height Control
B	Shaft			Not Req.	FKS-1/4	Not Req.	Attach to R6A per instructions
R7	25Meg		76503				Focus Control

Note 1. Volume Control & On-Off Switch is attached to rear of Tone Switch
* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ± 10% unless otherwise specified
R8	3300Ω	½	504233		Antenna Coil Shunt
R9	3300Ω	½	504233		AGC Network
R10	150Ω 20%	½			AGC Network
R11	47Ω	½	504047		RF Amplifier Cathode
R12	82Ω 5%	½	13961		RF Amplifier Cathode
R13	470KΩ 20%	½	504147		RF Amplifier Grid
R14	1000Ω 20%	½	504210		RF Amplifier Decoupling
R15	1000Ω 20%	½	504210		RF Amplifier Decoupling
R16	100kΩ	½	504410		Isolation
R17	100kΩ 20%	½	504410		Mixer Grid
R18	3300Ω 20%	½	504233		RF Coil Shunt
R19	100kΩ 20%	½	504410		Oscillator Grid
R20	10kΩ 20%	½	504310		Oscillator Plate
R21	680kΩ	½	30563	BTS-680K-5%	AGC Network
R22	68kΩ	½	504368	BTS-68K	AGC Network
R23	100kΩ	½	503410	BTS-100K	AGC Network
R24	100Ω 20%	½	504110	BTS-100	Decoupling
R25	6800Ω	½	13268	BTS-6800	1st Video IF Coil Shunt
R26	1000Ω 20%	½	504210	BTS-1000	AGC Network
R27	100Ω 20%	½	504110	BTS-100	1st Video IF Amplifier Cathode
R28	47kΩ	½	503347	BTS-47K	1st Video IF Amplifier Screen
R29	1000Ω	½	503210	BTS-1000	1st Video IF Amplifier Plate
R30	1000Ω	½	503210	BTS-1000	2nd Video IF Amplifier Grid
R31	56Ω 5%	½	502056		2nd Video IF Amplifier Cathode
R32	47kΩ	½	503347	BTS-47K	2nd Video IF Amplifier Screen
R33	1000Ω	½	503210	BTS-1000	2nd Video IF Amplifier Plate Decoupling
R34	68Ω 5%	½	34763		3rd Video IF Amplifier Cathode
R35	4700Ω	½	503247	BTS-4700	3rd Video IF Amplifier Screen
R36	1000Ω 5%	½	34766	BTS-1000 5%	3rd Video IF Amplifier Plate Decoupling
R37	6800Ω 5%	½	14659	BTS-6800 5%	3rd Video IF Coil Shunt
R38	56kΩ	½	503356	BTS-56K	4th Video IF Coil Shunt
R39	180Ω	½	503118	BTS-180	4th Video IF Amplifier Cathode
R40	1000Ω	½	503210	BTS-1000	4th Video IF Amplifier Screen
R41	6800Ω	1	513368	BTA-6800	4th Video IF Amplifier Plate Decoupling
R42	470Ω 20%	½	504147	BTS-470	Decoupling
R43	100Ω 20%	½	504110	BTS-100	Decoupling
R44	5600Ω	5	76390	1 3/4-5600	Voltage Divider
R45	2500Ω	10	76469	1 3/4-2500	Voltage Divider
R46	100kΩ	½	503410	BTS-100K	Isolation
R47	47kΩ	½	503347	BTS-47K	4th Video IF Amplifier Screen See Note 1.
R48	470kΩ	½	503447	BTS-470K	1st. Sound IF Grid
R49	1000Ω 20%	½	504210	BTS-1000	Isolation
R50	3900Ω 5%	½	30694	BTS-3900 5%	Video Amplifier Grid
R51	43Ω	2	502943		Video Amplifier Cathode
R52	18kΩ	2	523318	BTB-18K	Video Amplifier Screen
R53	6000Ω	10	76638	1 3/4A-6000	Video Amplifier Plate Wire Wound
R54	470kΩ	½	503447	BTS-470K	Voltage Divider
R55	33kΩ	½	503333	BTS-33K	Voltage Divider
R56	4700Ω	½	503247	BTS-4700	Contrast Network
R57	5600Ω	½	503256	BTS-5600	Contrast Network
R58	8200Ω	½	503282	BTS-8200	Contrast Network
R59	2200Ω	½	503222	BTS-2200	Voltage Divider
R60	150kΩ	½	503415	BTS-150K	Picture Tube Cathode
R61	150kΩ	½	503415	BTS-150K	Picture Tube Grid
R62	100kΩ	½	503410	BTS-100K	Voltage Divider
R63	220kΩ	½	503422	BTS-220K	Voltage Divider
R64	82Ω 5%	½	13961		1st. Sound IF Amplifier Cathode
R65	27kΩ	½	503327	BTS-27K	1st. Sound IF Amplifier Screen
R66	1000Ω	½	503210	BTS-1000	1st. Sound IF Decoupling
R67	47kΩ	½	513347	BTS-47K	2nd. Sound IF Amplifier Grid
R68	68Ω 5%	½	34763		2nd. Sound IF Amplifier Cathode
R69	56kΩ	½	513356	BTS-56K	2nd. Sound IF Amplifier Screen
R70	18kΩ	½	503318	BTS-18K	Bleeder
R71	1000Ω 20%	½	504210	BTS-1000	2nd. Sound IF Decoupling
R72	47Ω 5%	½	503047		Balancing
R73	1200Ω 20%	½	503212	BTS-1200	Balancing
R74	1000Ω 5%	½	34766	BTS-1000	Balancing
R75	6800Ω 20%	½	503268	BTS-6800	Ratio Detector Diode Load
R76	6800Ω 5%	½	14659	BTS-6800 5%	Ratio Detector Diode Load
R77	39kΩ	½	503339	BTS-39K	De-emphasis
R78	27kΩ	½	503327	BTS-27K	Tone Compensator
R79	22kΩ	½	503322	BTS-22K	Tone Compensator
R80	18kΩ	½	503318	BTS-18K	Tone Compensator
R81	10Meg 20%	½	504610	BTS-10Meg	Audio Amplifier Grid
R82	330kΩ	½	503433	BTS-330K	Audio Amplifier Plate
R83	470kΩ	½	503447	BTS-470K	Output Grid
R84	330Ω	1	76485		Output Cathode Wire Wound
R85	330Ω	1	76485		Output Cathode Wire Wound
R86	470Ω	1	76467	BTA-470	Output Decoupling
R87	8.2Meg	½	503582	BTS-8.2Meg	Bias Network

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R88	56kΩ	½	503356	BTS-56K	Bias Network
R89	180kΩ	½	503418	BTS-180K	Bias Network
R90	6800Ω	½	503268	BTS-6800	Bleeder
R91	10kΩ	½	503310	BTS-10K	Keyed AGC Grid
R92	1.2Meg	½	503512	BTS-1.2Meg	Keyed AGC Grid
R93	15kΩ	2	523315	BTB-15K	Keyed AGC Cathode
R94	12kΩ	½	503312	BTS-12K	Keyed AGC Screen
R95	82kΩ	½	503382	BTS-82K	AGC Network
R96	68kΩ	½	503368	BTS-68K	AGC Network
R97	150kΩ	½	503415	BTS-150K	AGC Network
R98	150kΩ	½	503415	BTS-150K	AGC Network
R99	27kΩ	½	513327	BTA-27K	Sync. Seperator Grid
R100	150kΩ	½	503415	BTS-150K	Sync. Seperator Cathode
R101	220kΩ	½	503422	BTS-220K	Sync. Amplifier Cathode
R102	1200Ω	½	503212	BTS-1200	Sync. Amplifier Plate
R103	100kΩ	½	503410	BTS-100K	Sync. Amplifier Grid - See Note 2
R104	1.2Meg	½	503512	BTS-1.2Meg	Sync. Amplifier Plate - See Note 3
R105	4.7Meg	½	503547	BTS-4.7Meg	Voltage Divider See Note 1.
R106	33kΩ	½	503333	BTS-33K	Isolation See Note 4
R107	47kΩ	½	503347	BTS-47K	Voltage Divider See Note 1
R108	1.8Meg	½		BTS-1.8Meg	Voltage Divider See Note 1
R109	120kΩ	½	503412	BTS-120K	Vertical Sync. Amplifier Grid
R110	120kΩ	½	503412	BTS-120K	Voltage Divider
R111	120kΩ	½	503412	BTS-120K	Voltage Divider See Note 5
R112	1.5Meg	½	503515		Voltage Divider
R113	270kΩ	½	503427	BTS-270K	Vertical Sync. Amplifier Plate
R114	39kΩ	½	503339	BTS-39K	Integrator Network
R115	22kΩ	½	503322	BTS-22K	Integrator Network
R116	8200Ω	½	503282	BTS-8200	Integrator Network
R117	8200Ω	½	503282	BTS-8200	Integrator Network
R118	68kΩ	½	503368	BTS-68K	Isolation
R119	3.3Meg	½	503533	BTS-3.3Meg	Differentiator
R120	470kΩ	½	503447	BTS-470K	Vertical Oscillator Grid
R121	820kΩ	½	503482	BTS-820K	Vertical Oscillator Plate
R122	560kΩ	½	503456	BTS-560K	Voltage Divider
R123	10kΩ	½	503310	BTS-10K	Vertical Peaking
R124	68kΩ 20%	½	504368	BTS-68K	Vertical Feedback Network
R125	100kΩ	½	503410	BTS-100K	Vertical Feedback Network
R126	22kΩ 5%	1	71989	BTA-22K 5%	Vertical Feedback Network
R127	22kΩ 5%	1	71989	BTA-22K 5%	Vertical Feedback Network
R128	2.2Meg	½	504522	BTS-2.2Meg	Vertical Peaking
R129	120kΩ 5%	½	30180	BTS-120K 5%	Vertical Peaking
R130	8200Ω	½	503382	BTS-8200	Vertical Peaking
R131	2.2Meg 20%	½	504522	BTS-2.2Meg	Vertical Output Grid
R132	470Ω 20%	½	504147	BTS-470	Vertical Output Cathode
R133	330Ω	½	503133	BTS-330	Vertical Output Plate
R134	470Ω	½	504147	BTS-470	Vertical Output Decoupling
R135	3300Ω	½	503333	BTS-3300	Vertical Integrator Network
R136	15kΩ	½	503315	BTS-15K	Vertical Integrator Network
R137	100kΩ	½	503410	BTS-100K	Sync. Peaking See Note 1.
R138	560kΩ	½	503456	BTS-560K	Isolation See Note 1.
R139	3.9Meg	½	503539	BTS-3.9Meg	Horizontal Sync. Amplifier Grid
R140	1000Ω	½	503210	BTS-1000	Horizontal Sync. Amplifier Cathode
R141	12kΩ	½	503312	BTS-12K	Horizontal Sync. Amplifier Plate
R142	1Meg	½	504310	BTS-1Meg	Horizontal Sync. Amplifier Grid
R143	330kΩ	½	503333	BTS-330K	Horizontal AFC Grid
R144	820kΩ	½	503482	BTS-820K	Horizontal AFC Grid
R145	82kΩ	½	503382	BTS-82K	Horizontal AFC Cathode
R146	330K	½	503433	BTS-330K	Horizontal AFC Cathode
R147	68kΩ	1	513368	BTA-68K	Voltage Divider
R148	22kΩ	1	513322	BTA-22K	Voltage Divider
R149	150kΩ	½	503415	BTS-150K	Horizontal AFC Feedback
R150	150kΩ 5%	½	512415	BTS-150K 5%	Horizontal AFC Grid
R151	8200Ω 5%	½	512382	BTS-8200 5%	Horizontal AFC Transformer Shunt
R152	820kΩ	½	503482	BTS-820K	Voltage Divider
R153	82kΩ 5%	1	13961	BTA-82K 5%	Horizontal Oscillator Plate
R154	47Ω 20%	½	504047		Parasitic Suppressor
R155	470kΩ	½	503447	BTS-470K	Horizontal Output Grid
R156	6800Ω	2	523268	BTB-6800	Horizontal Output Screen
R157	180Ω	2	76639	BTB-180	Horizontal Output Cathode
R158	8.2Meg	2	523582	BTB-8.2Meg	Voltage Divder See Note 6.
R159	10Meg	2	523610	BTB-10Meg	Voltage Divider See Note 6.
R160	1.5Ω 5%	1	76468		High Voltage Rectifier Filiment
R161	56KΩ	½	503356	BTS-56K	Decoupling
R162	560Ω	1	513156	BTA-560	Width Coil Shunt
R163	4.7Ω 5%	1	72633		High Voltage Filiment
R164	100Ω 20%	½			Parasitic Suppressor
R165	47K	½		BTS-47K	Sync. Amp. Grid See Note 1.
R166	3900Ω	½			Hor. AFC Filter Net.

Note 1. Not used in all Models
Note 2. Some Models use 56KΩ Resistor in this application
Note 3. Some Models use 1 Meg Resistor in this application
Note 4. Some Models use 120KΩ Resistor in this application
Note 5. Some Models use 47K Resistor in this application
Note 6. Some Models use one 18Meg Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.7A	115VAC ② .290A	6.3VAC ② 1.2A	6.3VAC ② .6A Sec. 4 .6.3VAC ② 9.0A	76429			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	220Ω	0Ω	76430				Horizontal Output Trans.
	tapped	SEC. 2					
	②8.7Ω	0Ω					
	36Ω						
	40Ω						
	53Ω						
T3	550Ω	16Ω	76431	A-8112①	A-3036 ①		Vertical Output Trans.
T4A	24Ω		76616	DY-9	MDF-70		Horiz. Deflection Coils
B	45Ω						Vertical Deflection Coils

① Drill New Mounting Holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T5	7kΩ	3.8Ω	370Ω	.4Ω	75520	A-3878 ②	A-3020	RO-13 ②	② Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS FIELD. RES.	RATINGS V. C. IMP.	REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P.M.	3.8Ω		ST-115	8A31	
B	P.M.	3.4Ω		Mod. P8-V		
			75022	ST-115	8A31	
	CONE DIA.	V. C. DIA.				
SP2A	7 3/8"	9/16"				
B	7 3/8"	1"	75024			

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 v-)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.290A	39Ω	.8Henries	76498	C-2326②	C-2996 ②	TR-3300 ②	② Drill One New Mounting Hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Coil	.6Ω	.6Ω	73591			Antenna Matching Transformer Complete Part #76536
L3	Ant. Coil	.6Ω	.6Ω	73591			
L4	IF Trap	0Ω		76542			
L5	Ant. Shunt	0Ω		76538			
L6	Ant. Shunt	0Ω		76537			
L7	IF Trap	0Ω		76541			
L8	FM Trap	0Ω		76540			
L9	Ant. Coils	0Ω		76554			Complete with Rotor, Coils & C15
L10	RF Grid Coils	0Ω		76556			Complete with Rotor, Coils C14, R8 & R9
L11	RF Grid Coil	0Ω		76561			
L12	RF Plate Coils	0Ω		76553			Complete with Rotor, Coils
L13	RF Plate Coil	0Ω		76529			Includes Trimmer .8-3.8MMFD
L14	RF Coup. Coil	0Ω		76562			
L15	Video Trap	0Ω		76535			
L16	Fil. Choke	0Ω		73477			
L17	Mixer Grid Coils	0Ω		76551			Complete with Rotor, Coils, C24, C23, R18 R17 & R16
L18	Mixer Grid Coil	0Ω		76560			Channel 13
L19	Osc. Coils	0Ω		76546			Complete with Rotor, Coils, C28 & C27
L20	Fil. Choke	0Ω		76563			
L21	Fil. Choke	0Ω		76564			
L22	Fil. Choke	0Ω					
L23	Conv. Plate	.3Ω	.1Ω	76528			
L24	1st. Video IF	0Ω	.2Ω	76432			Includes Trap
L25	2nd. Video IF Primary	.1Ω		76434			Includes Sound Trap
L26	2nd. Video IF Secondary	.1Ω		76435			Includes Adj. Sound Trap
L27	Fil. Choke	0Ω		73477			
L28	3rd. Video IF	.2Ω	.2Ω	76433			
L29	4th. Video IF	.2Ω	.2Ω	76433			
L30	Sound Take Off	6.4Ω		76437			Tap at 5.2Ω
L31	Peaking Coil	5.4Ω		76481	TV-186		72 Microhenries Blue-White Dots
L32	Peaking Coil	11Ω		75252	TV-188		500 Microhenries Green-White Dots
L33	Peaking Coil	4.2Ω		72619			93 Microhenries Orange Dot Wound on 10K Resistor
L34	4.5MC Trap	2.9Ω		76482	TV-151		Blue-Yellow Dots Wound on 47MMF Cap.
L35	Peaking Coil	11Ω		75252	TV-188		500 Microhenries Green White Dots
L36	Sound IF	5Ω	3.1Ω	76438	TV-108		
L37	Ratio Det. Trans.	4.2Ω	.2Ω	76439	TV-110		Tap at .2Ω
L38	Horiz. Osc.	70Ω	44Ω	76440			
L39	Width Coil	12Ω		76441			
L40	Horiz. Lin.	21Ω		76442			
L41	RF Choke	.72Ω		76640		CL-1	

RCA VICTOR MODELS 17T153, 17T155, 17T160, 17T174 (Ch. KCS66, A)

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			RCA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1/4A	73600		318.250		

SELENIUM RECTIFIER

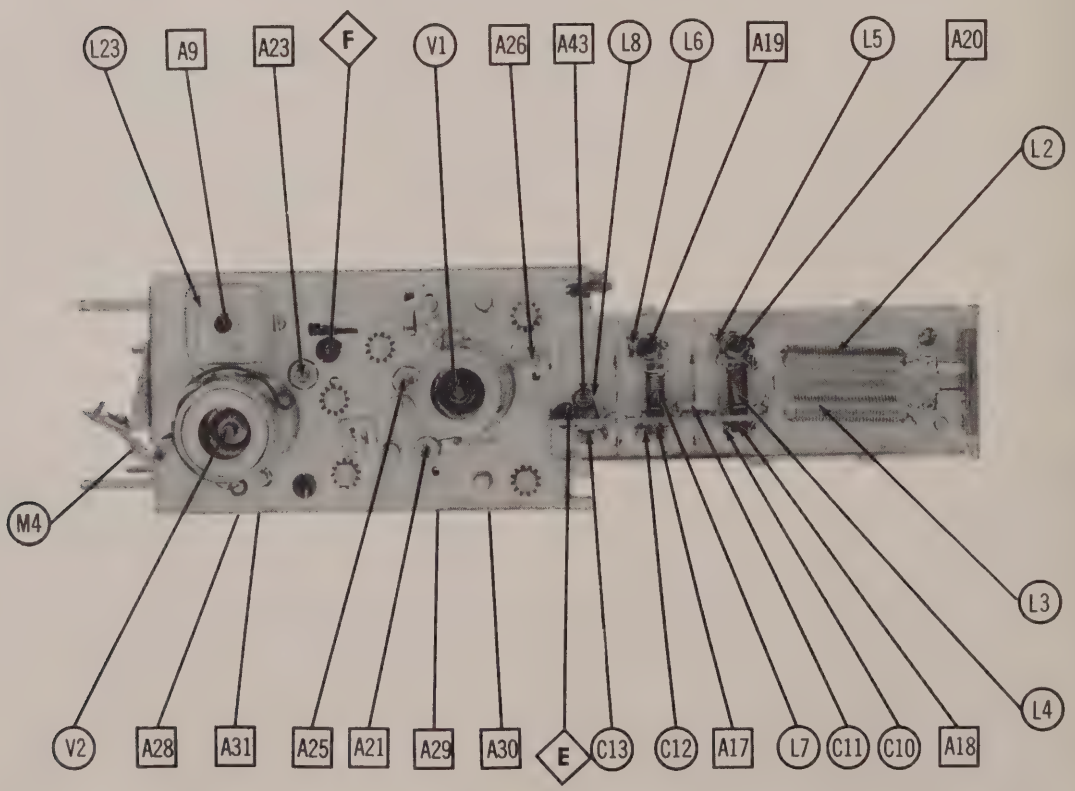
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	RCA PART No.	SYLVANIA PART No.	SELETRON PART No.	
M2	.260A	76452	NH-5	6Q4	
M3	.260A	76452	NH-5	6Q4	

DIAL LIGHTS

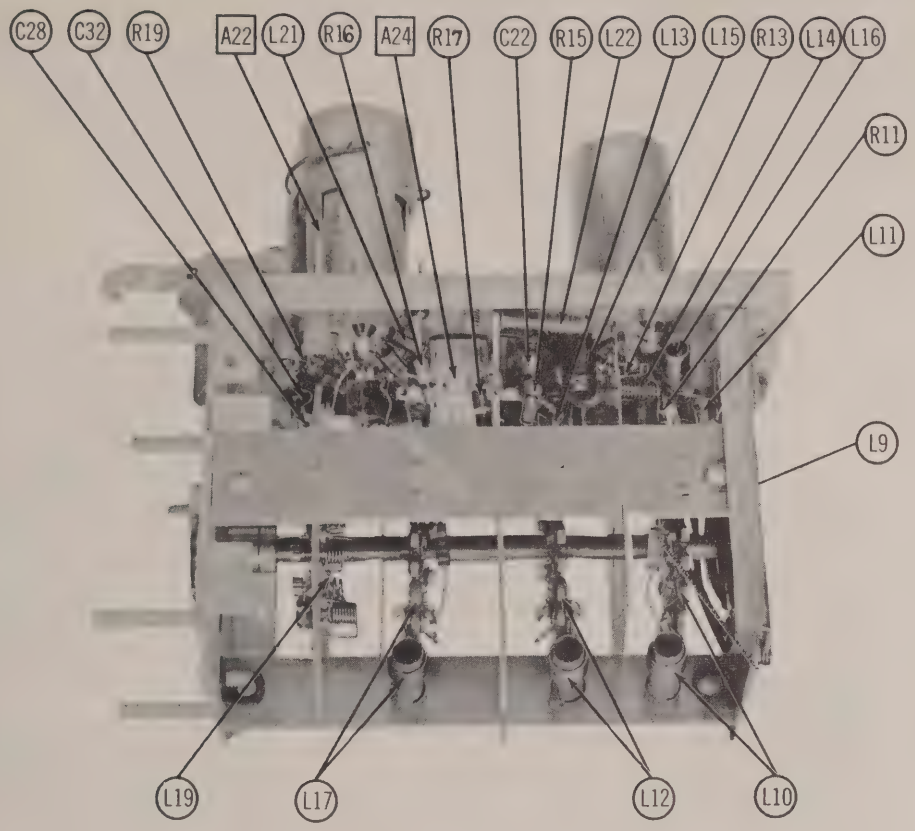
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA VICTOR PART No.		
M4	Bayonet	7.5	.2	White	11765		Type No. 51
M10	Bayonet	7.5	.2	White	11765		Type No. 51 Console Models only

MISCELLANEOUS

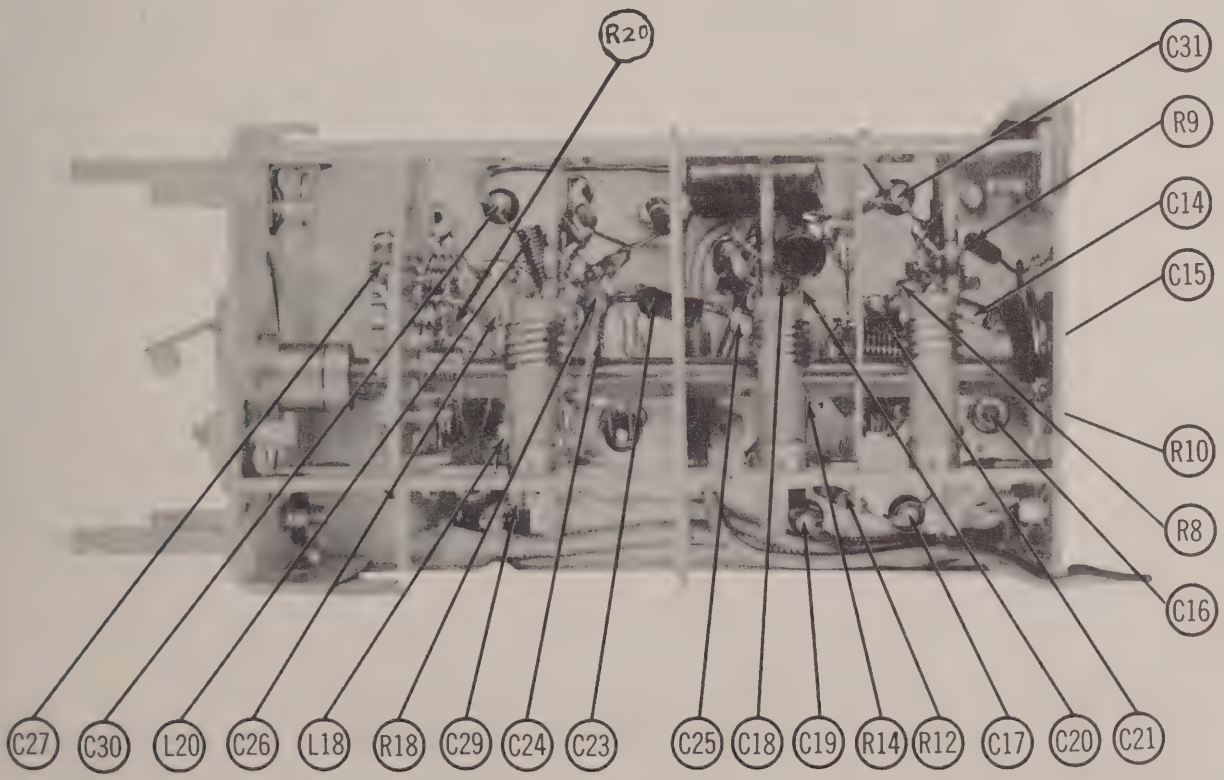
ITEM No.	PART NAME	RCA PART No.	NOTES
M5	RF Tuner		
M6	5th Video IF		
	Resistor		10KΩ
	Capacitor		8MMF
	Crystal	76675	1N60
	Capacitor		10MMF
	RF Choke		36 Microhenries
			Det. Assy Part # 76436
M7	Switch	76446	Tone Phono-Tone TV
M8	Centering Magnet	76375	
M9	Ion Trap	76141	
A16	Trimmer	76532	1-4MMF (Balancing in Ratio Det.)
B3, B4	Trimmer	75217	Dual (Horiz. Drive and Lock) 10-160MMF
	Knob	74969	Focus
	Knob	76596	Brightness and Vert. Hold (Beige)
	Knob	76595	Brightness and Vert. Hold (Maroon)
	Knob	76594	Channel Selector (Beige)
	Knob	76593	Channel Selector (Maroon)
	Knob	76592	Fine Tuning (Beige)
	Knob	76591	Fine Tuning (Maroon)
	Knob	75464	Contrast and Horiz. Hold (Beige)
	Knob	74963	Contrast and Horiz. Hold (Maroon)
	Knob	76598	Tone Phono-TV (Beige)
	Knob	76597	Tone Phono-TV (Maroon)



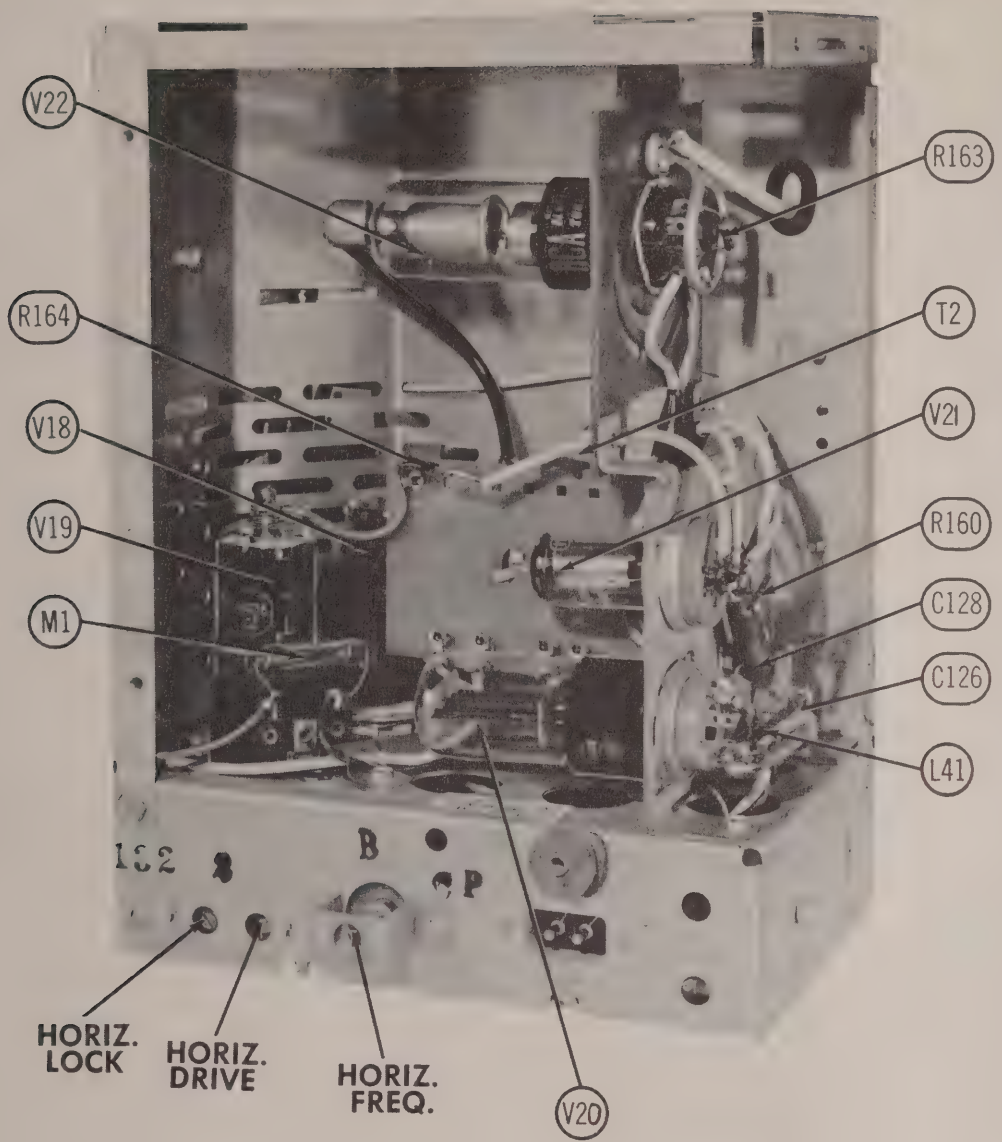
RF TUNER-TOP VIEW



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



HV SUPPLY

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove one 1/4" Hex head screw from speaker plug- Disconnect speaker plug.
5. Disconnect picture tube socket.
6. Disconnect high voltage lead.
7. Disconnect yoke plug.
8. Remove six 7/16" hex head bolts from chassis. Remove chassis.
9. Remove three 1/4" hex nuts from speaker. Remove speaker.

Note: For picture tube removal it is necessary to remove the chassis as outlined above.

PHOTOFACT* Folder

STEWART-WARNER
MODELS 9202-C, DA, DB, DD, E, F

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MODEL 9202 DB

STEWART-WARNER
MODELS 9202-C, DA, DB, DD, E, F

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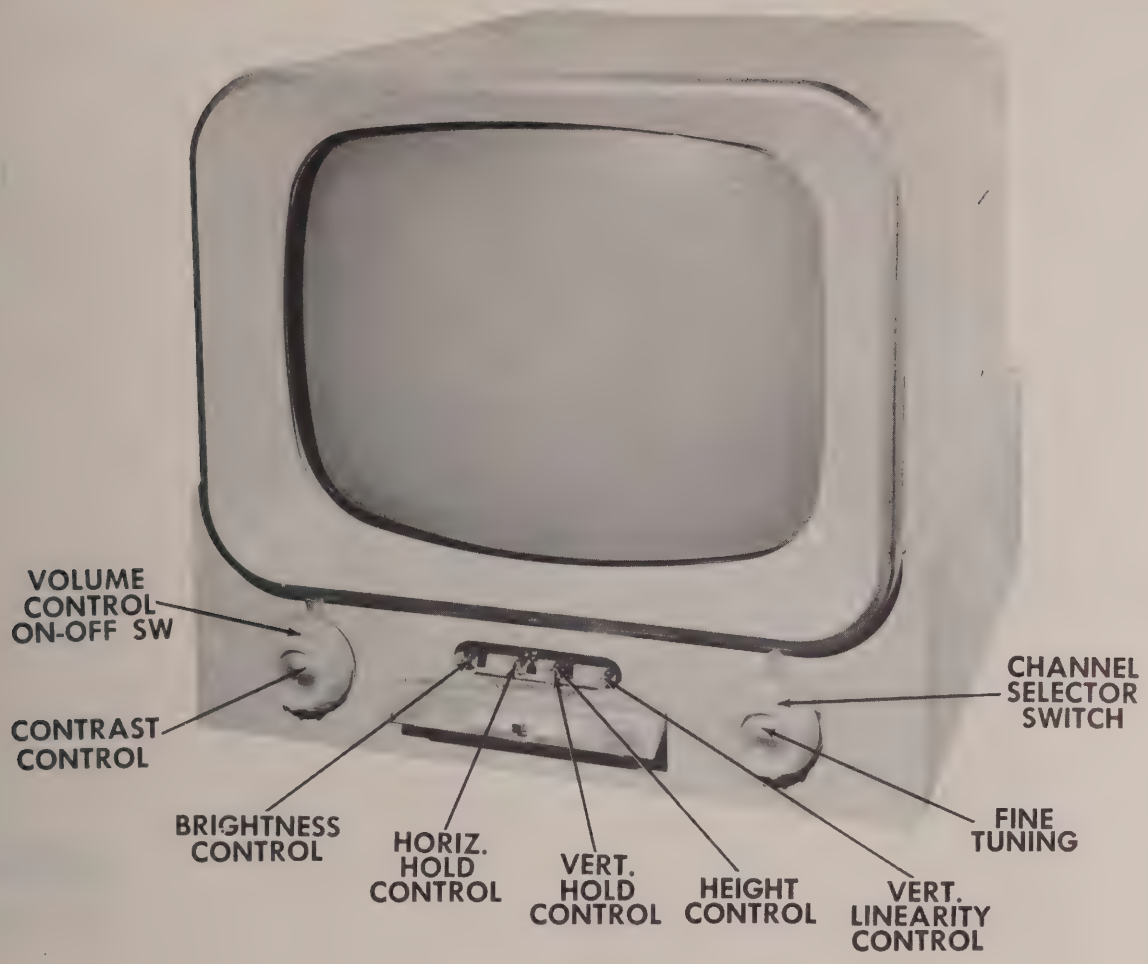
DATE 1-52 SET 158 FOLDER 12



Stewart Warner 9202-DB

TRADE NAME	Stewart Warner Models 9202-C, 9202-DA, 9202-DB, 9202-DD, 9202-E, 9202-F
MANUFACTURER	Stewart Warner Corp., 1826 Diversey Pkwy., Chicago 14, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — Rating 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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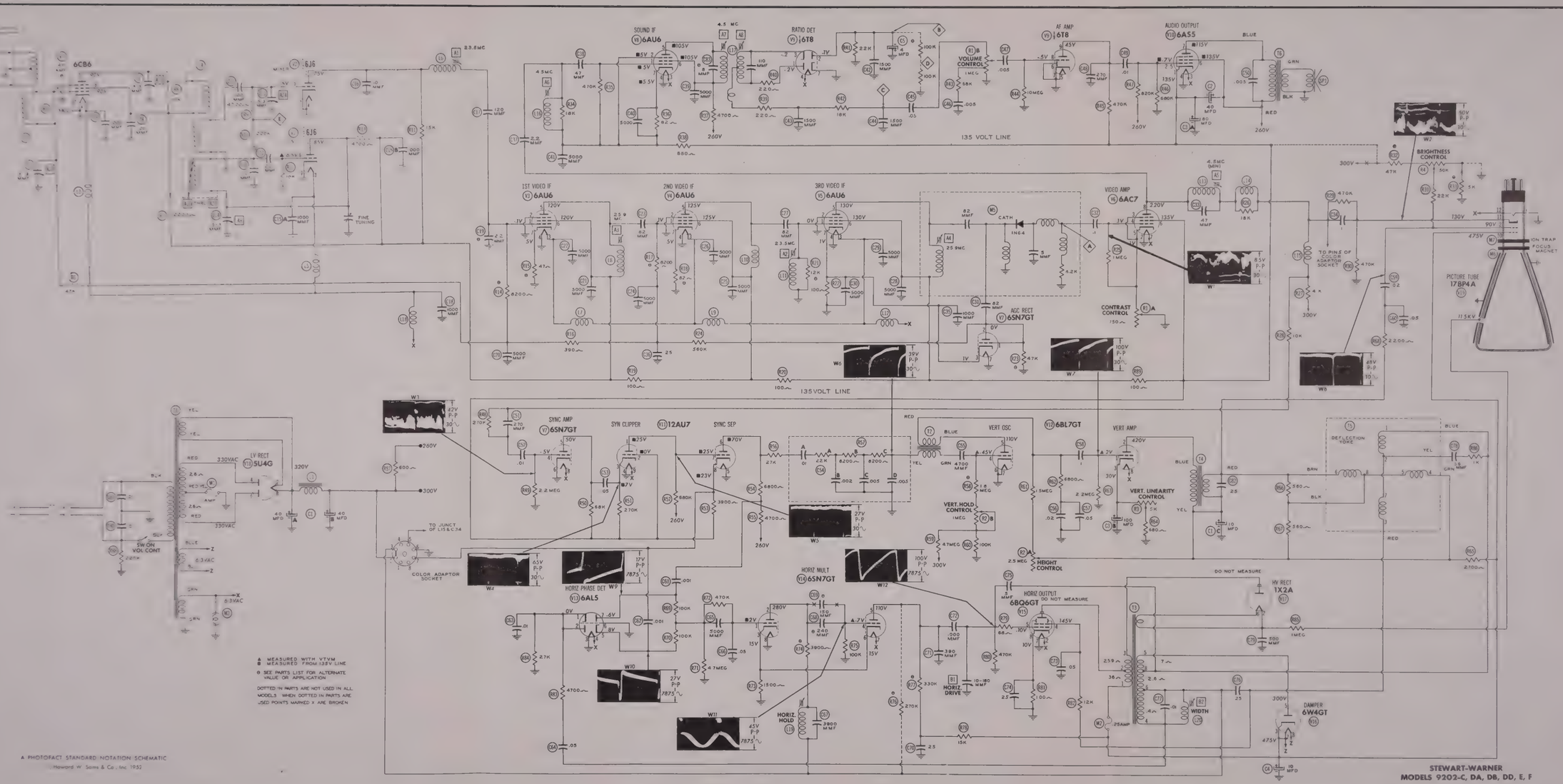
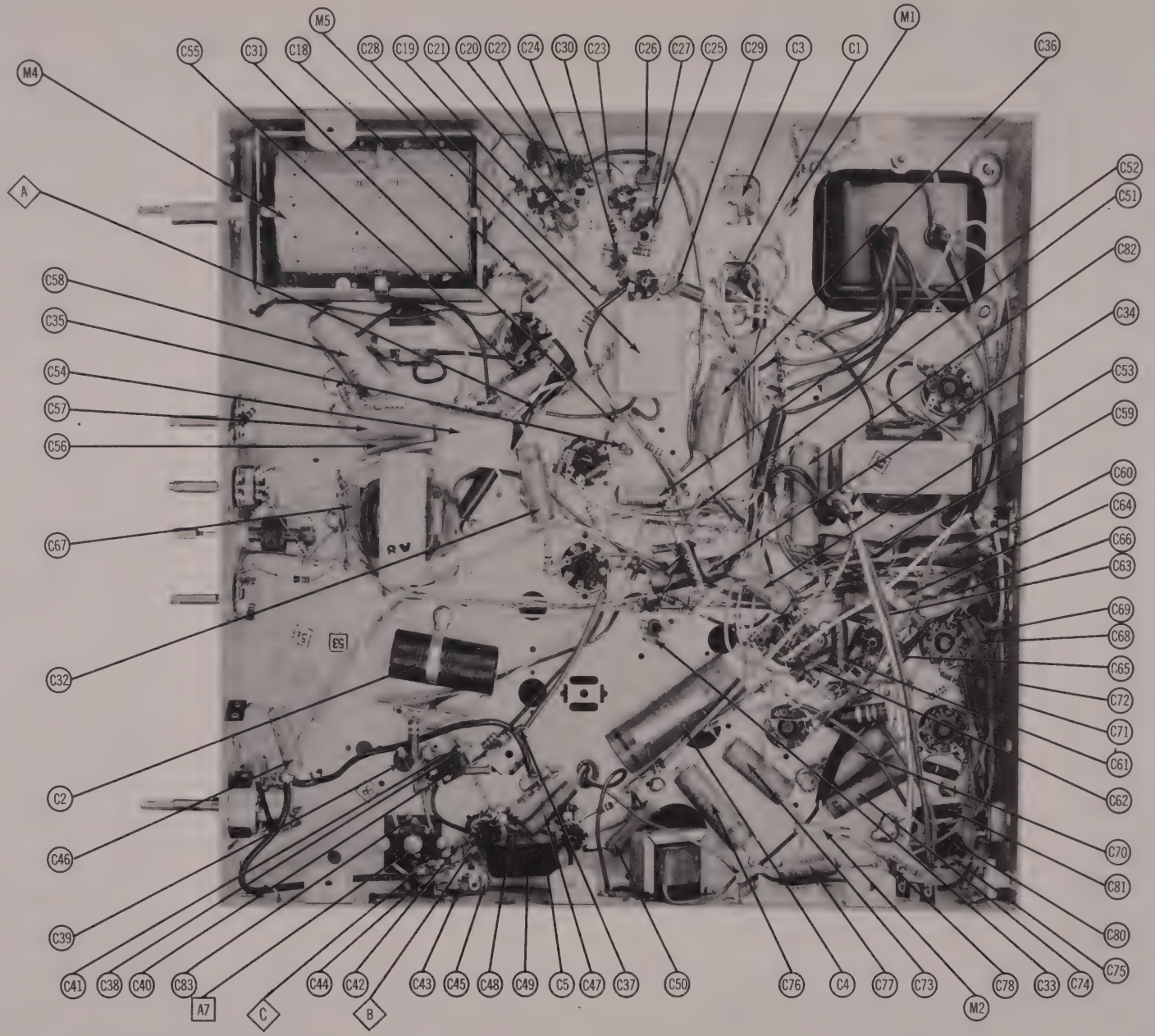
STEWART-WARNER
MODELS 9202-C, DA, DB, DD, E, F

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

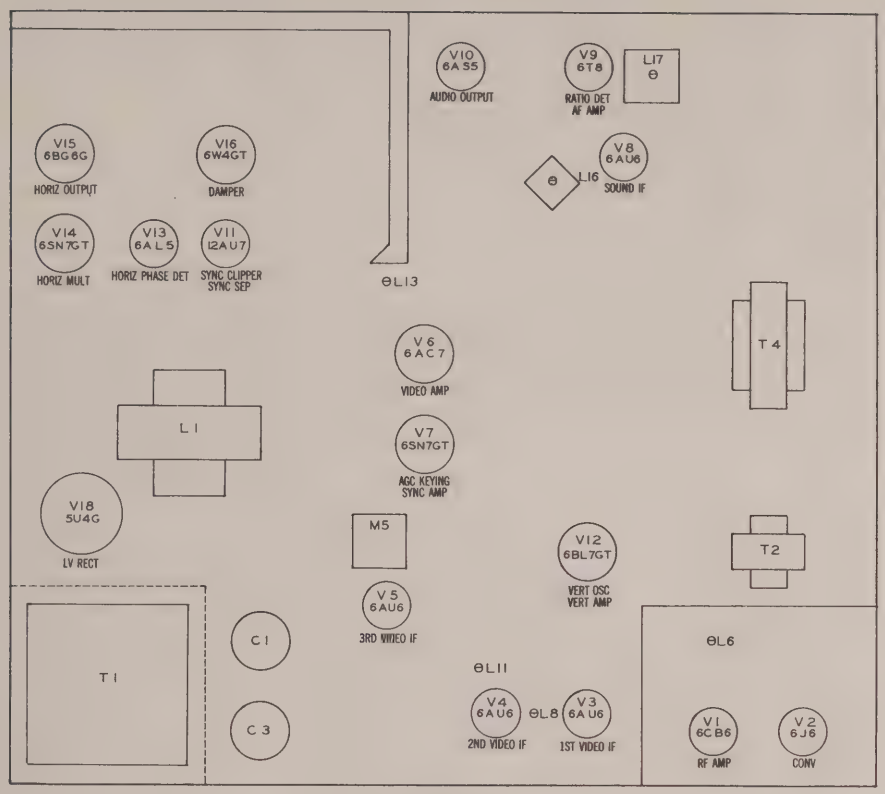
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


STEWART-WARNER
MODELS 9202-C, DA, DB, DD, E, F
SOUND IF V8 6AU6
RATIO DET V9 ½6T8
AF AMP V9 ½6T8
AUDIO OUTPUT V10 6A55
1ST VIDEO IF V2 6AU6
2ND VIDEO IF V4 6AU6
3RD VIDEO IF V5 6AU6
VIDEO AMP V6 6AC7
AGC RECT V7 6SN7GT
SYNC AMP V7 6SN7GT
SYN CLIPPER V11 12AU7
SYNC SEP
VERT OSC V12 6BL7GT
VERT AMP
HORIZ MULT V14 6SN7GT
HORIZ PHASE DET V13 6AL5
HORIZ OUTPUT 6BQ6GT
HV RECT 1X2A
DAMPER 6W4GT
LV RECT V13 5U4G
PICTURE TUBE 17BP4A
135 VOLT LINE
VOLUME CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
VERT. LINEARITY CONTROL
HEIGHT CONTROL
HORIZ. DRIVE
WIDTH
HORIZ. HOLD
FINE TUNING
SW ON VOL CONT
ION TRAP FOCUS MAGNET
DEFLECTION YOKE
COLOR ADAPTOR SOCKET
TO PINS OF COLOR ADAPTOR SOCKET
DO NOT MEASURE
A MEASURED WITH VTVM
B MEASURED FROM 135 V LINE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1952
STEWART-WARNER
MODELS 9202-C, DA, DB, DD, E, F

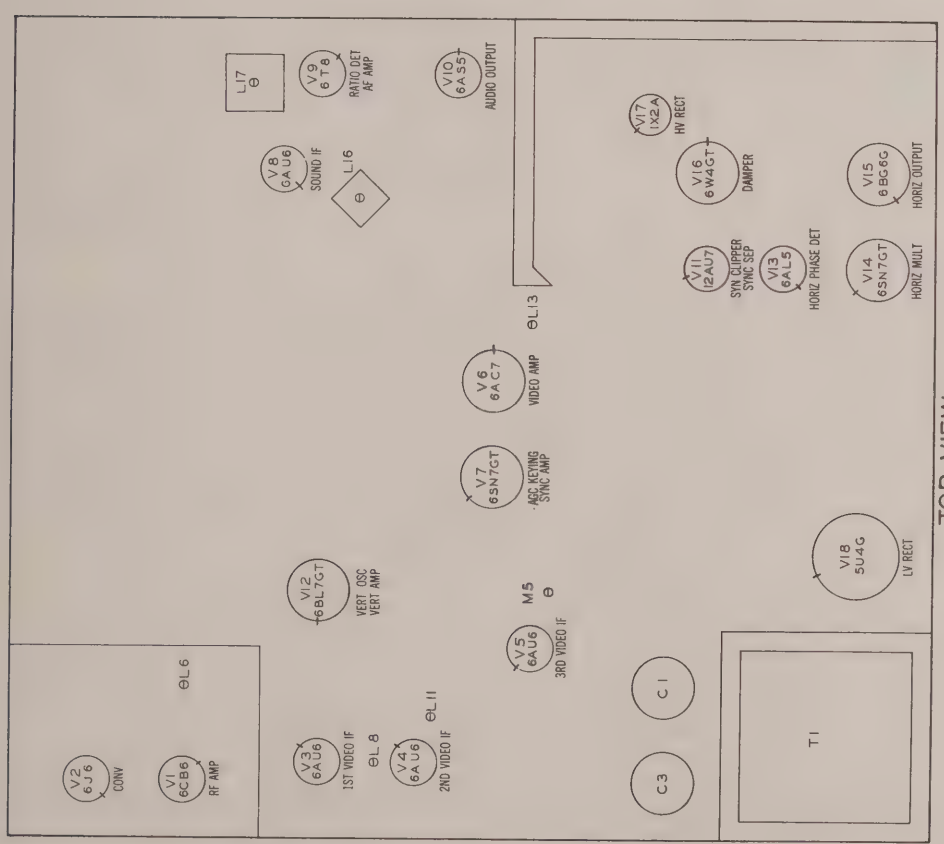
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed . This will disable the local oscillator tube and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C36, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23.5MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection
2.	"	"	25.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis .	25MC (10MC swp.)	22.25MC 26.75MC	Any	Vert. amp. thru 10KΩ to Point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A4 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to Pin 4, (Grid) of 6AC7, (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru detector, (Fig.2), to Pin 11 of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to Pin 4, (Grid) of 6AC7, (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A6, A7	Adjust for max. deflection.
6.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modualted signal with 60∿ modualtion and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 4, (grid) of 6AC7, (V6). Low side to chassis.	4.5MC (450 KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizor C5. Adjust for maximum amplitudeand symmetry as per fig. 3.
6.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust A8 so 4.5 MC occurs at center of crossover lines as per fig.4. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A9. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel.
If adjustment of A9 will not bring all channels well within the range of fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel. that is off frequency. The channel strip adjustment are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A10	Adjust to place markers as shown in fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC S wp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A22, A23 A24	Adjust for response curve similar to fig. 6. with markers above 90%.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig 6. If markers fall below 70% on any channel make compromise adjustment of A22, A23, and A24 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

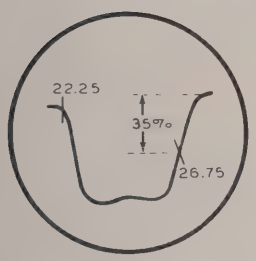


FIG. 1

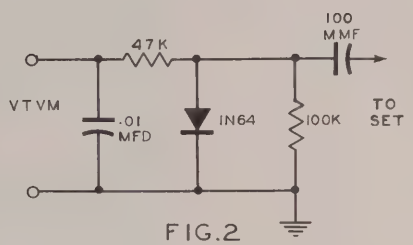


FIG. 2

FIG. 3

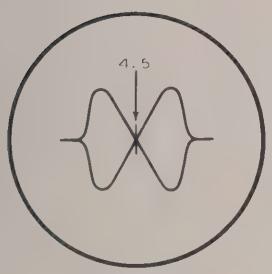


FIG. 4

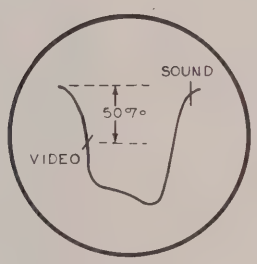


FIG. 5

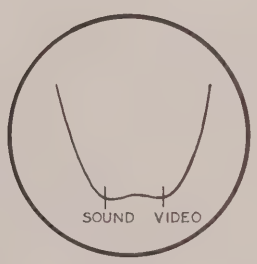


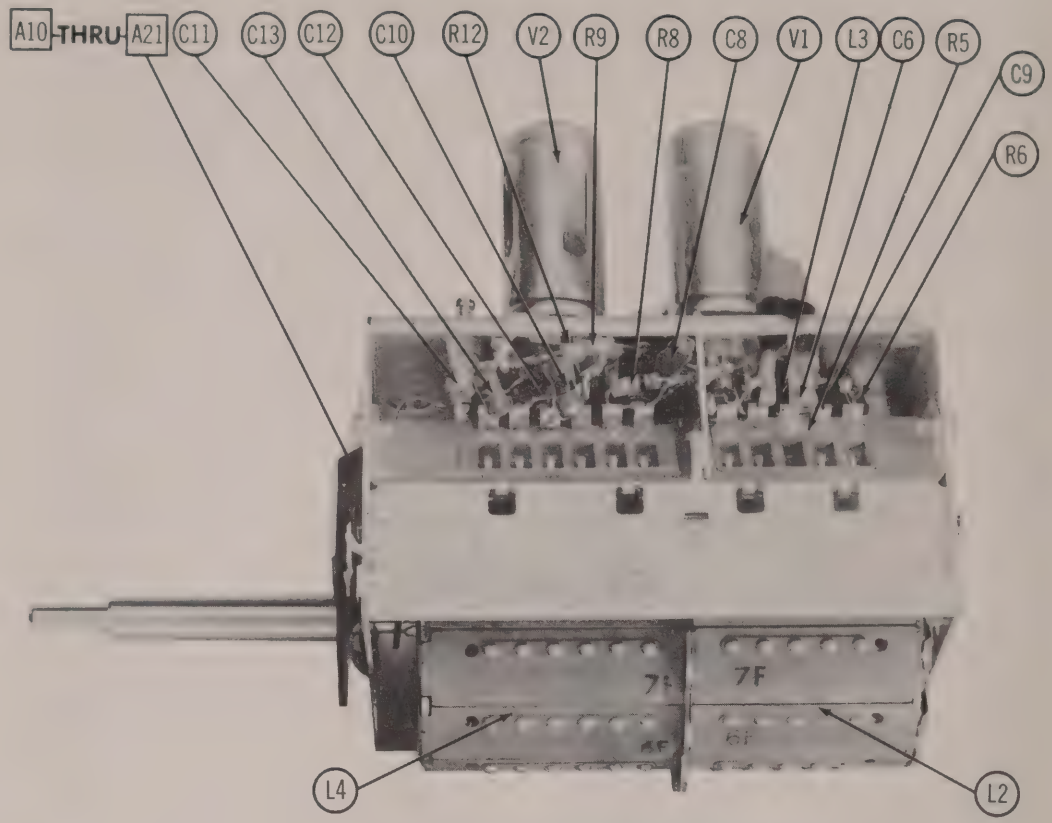
FIG. 6

RESISTANCE MEASUREMENTS

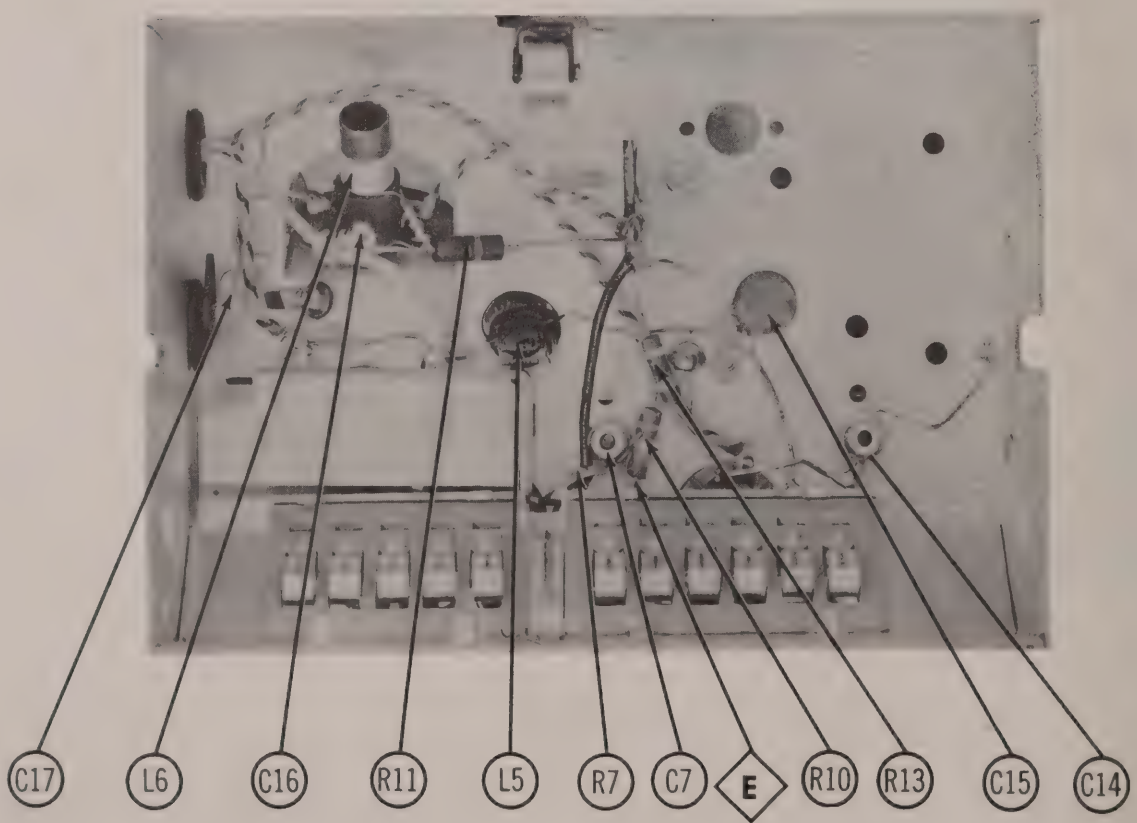
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	650KΩ	0Ω	.1Ω	0Ω	■2.5KΩ	■2.5KΩ	0Ω		
V 2	6J6	■5KΩ	■15KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AU6	600KΩ	0Ω	.1Ω	0Ω	■300Ω	■300Ω	47Ω		
V 4	6AU6	600KΩ	0Ω	.1Ω	0Ω	■200Ω	■200Ω	82Ω		
V 5	6AU6	.3Ω	0Ω	.1Ω	0Ω	■100Ω	■100Ω	100Ω		
V 6	6AC7	0Ω	0Ω	100Ω	1Meg	100Ω	■0Ω	.1Ω	†4KΩ	
V 7	6SN7GT	47KΩ	47KΩ	100Ω	2.2Meg	■68KΩ	0Ω	0Ω	.1Ω	
V 8	6AU6	■470KΩ	■680Ω	.1Ω	0Ω	†5.4KΩ	†5.4KΩ	■760Ω		
V 9	6T8	Inf	22KΩ	Inf	.1Ω	0Ω	0Ω	0Ω	10Meg	■470KΩ
V 10	6AS5	260KΩ	420KΩ	.1Ω	0Ω	420KΩ	†670Ω	†1.1KΩ		
V 11	12AU7	†680KΩ	■0Ω	■270KΩ	0Ω	0Ω	†12KΩ	†680KΩ	■3.9KΩ	.1Ω
V 12	6BL7GT	2.2Meg	#3.5KΩ	1.4KΩ	2.4Meg.	#2.4Meg	0Ω	0Ω	.1Ω	
V 13	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.1Meg	†4KΩ	1.5KΩ	100KΩ	#345KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BQ6GT	Inf	.1Ω	Inf	†12KΩ	470KΩ	470KΩ	0Ω	100Ω	TOP CAP #36Ω
V 16	6W4GT	Inf	Inf	50KΩ	Inf	†75Ω	#0Ω	#0Ω	#.2Ω	
V 17	1X2A	PINS 1 THROUGH 9 HAVE INF RESISTANCE								TOP CAP #295Ω
V 18	5U4G	#0Ω	70KΩ	Inf	28Ω	.1Ω	26Ω	Inf	70KΩ	
V 19	17BP4A	0Ω	47KΩ	PIN 10 #0Ω	PIN 11 220KΩ	PIN 12 .1Ω				

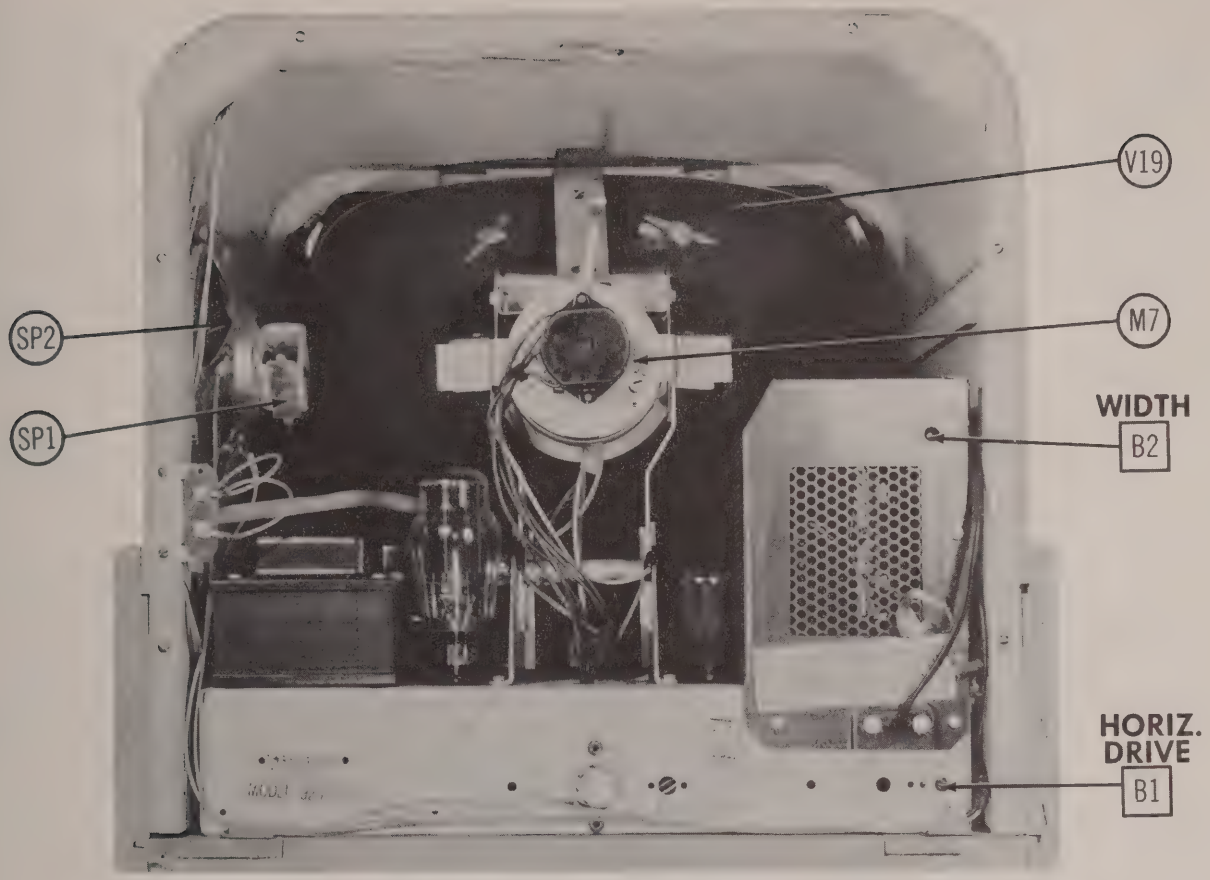
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V 18
# MEASURED FROM PIN 3 OF V 16
■ MEASURED FROM 135 VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold adjustment until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1), counter-clockwise as far as possible without crowding the right half of the picture.

Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.

Slight retouching of B1 may be necessary to obtain optimum width and horizontal linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 screws and rear cover.
2. Remove 4 push-on type control knobs from front panel.
3. Disconnect and remove speaker.
4. Disconnect built-in antenna lead from cabinet.
5. Remove 6 chassis bolts, Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.		6CB6	6CB6	7CM
B	RF Amp.		6AG5	6AG5	7BD
C	RF Amp.		6BC5	6BC5	7BD
V2	Converter		6J6	6J6	7BF
V3	1st Video IF Amp.		6AU6	6AU6	7BK
V4	2nd Video IF Amp.		6AU6	6AU6	7BK
V5	3rd Video IF Amp.		6AU6	6AU6	7BK
V6	Video Amp.		6AC7	6AC7	8N
V7	AGC Rect. Sync. Amp.		6SN7GT	6SN7GT	8BD
V8	Sound IF Amp.		6AU6	6AU6	7BK
V9	Ratio Det. - AF Amp.		6T8	6T8	9E
V10	Audio Output		6A55	6A55	7CV
V11	Sync. Clipper - Sync. Sep		12AU7	12AU7	9A
V12	Vert. Osc. - Vert. Amp.		6BL7GT	6BL7GT	8BD
V13	Horiz. Phase Det.		6AL5	6AL5	6BT
V14	Horiz. Mult.		6SN7GT	6SN7GT	8BD
V15	Horiz. Output		6BQ6GT	6BQ6GT	6AM
V16	Damper		6W4GT	6W4GT	4CG
V17	HV Rect.		1X2A	1X2A	8Y
V18	LV Rect.		5U4G	5U4G	5T

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stewart Warner PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V19	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	509001	AFH3-43		UPT44145		TVL-3785	▲Filter
B	40	450							●Filter
C	10	450							▲Vert. Amp. Dec.
C2	40	300	160095	PRS450/40		BR4035		TVA-1611	Filter
C3A	80	250	509002	AFH3-142		UPT10025		TVL-3722	▲Decoupling
B	100	50				V15			▲Vert. Amp. Cathode Decoupling
C4	10	600	508680	PRS600/10		BRHV610			Stabilizing Cap. †
C5	4	150	502497	PRS150/4		BR415		TVA-1402	Variable Trimmer
C6	3-9		509064		829-10				Variable Trimmer
C7	.5-3		507698		829-3				RF Bypass
C8	120		513439	SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Decoupling
C9	1000		513009	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C10	100		513440	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C11	.5-3		507698		829-3				Variable Trimmer
C12	20		513441	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C13	10		513442	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C14	.5-3		507698		829-3				Variable Trimmer
C15A	1000		508576	BPD-2X001	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C16	10		513444	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C17	120		512542	SI120	D6-121		GP2K-121	5GA-T12	IF Coupling
C18	1000		513009	SI1000	D6-102		GP2L-102	5HK-D1	Fil. Bypass
C19	2.2		513001		TCZ-2.2		NP0K-2R2		Fixed Trimmer ●
C20	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C21	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Video IF Dec.
C22	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Video IF Fil.
C23	82		513016	SI82	D6-820		GP1K-820		IF Coupling
C24	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C25	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Video IF Dec.
C26	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Video IF Fil.
C27	82		513016	SI82	D6-820		GP1K-820		IF Coupling
C28	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd Video IF Dec.
C29	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd Video IF Fil.
C30	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd Video IF Cathode
C31	82		513016	SI82	D6-820		GP1K-820		IF Coupling
C32	.1	200	512033	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C33	47		513438	SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C34	.1	400	512035	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C35	1000		513009	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C36	.25	200	512045	P488-25		GT2P25		2TM-P25	AGC Filter
C37	2.2		513001		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C38	47		513002	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Sound IF Coupling
C39	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Decoupling
C40	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C41	5000		513013	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Grid Dec.
C42	1500		513010	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C43	1500		513010	SI1500	D6-152	1W5D19	GP2L-152	5HK-D15	RF Bypass
C44	1500		513010	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	De-emphasis
C45	.05	200	512027	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C46	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C47	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C48	270		513006	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	AF Amp. Plate
C49	.01	400	513006	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C50	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-103	6TM-D5	Audio Output Plate
C51	270		513006	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	Sync. Coupling
C52	.01	600	512013	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C53	.05	400	512029	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C54A	.01			P688-01	DD-103 †	PTE6S1	GP2-333-103	6SHK-S1 ¶	Vert. Integrator Net.
B	.002		+508062	P688-002	PC-100 †	PTE6D2	GP2-333-202	101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
D	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C55	4700	500	512533	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C56	.02	600	512019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Discharge
C57	.05	600	512308	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C58	.1	600	512037	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C59	.02	600	512019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C80	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Net.
C81	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C82	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C83	.01	200	512009	P288-01	D6-103	PTE4P1	GP2-333-103	2TM-S1	Voltage Divider
C84	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C85	5000		513013	BPD-005	D6-502	1D5D6	811-005	5HK-D5	Horiz. AFC Filter
C86	.05	200	512027	P288-05	DF-503	PTE4S5		2TM-S5	Horiz. AFC Filter
C87	3900	500	512540	1464-004		1DR5D4			Fixed Trimmer
C88	240	500		1469-00025		5R5T25			Horiz. MV Feedback ¶
C89	150	500		1469-00015		5R5T15			Horiz. MV Feedback ¶
C70	.25	600	512049	684-25		GP6P25		6TM-P25	Horiz. MV Decoupling
C71	390	500	512535	1469-0004		5R5T4		MS-34	Horiz. Discharge
C72	1000	500	512515	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sweep Coupling
C73	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C74	.25	200	512045	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C75	5	1500	513026						Horiz. Feedback
C76	.25	300	512045	P488-25		GT2P25		2TM-P25	Horiz. Sweep Coupling
C77	.01	600	512013	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C78	56	1500	513027						Fixed Trimmer
C79	500	20000	508888	MV20C	TV3-502				HV Filter
C80	.01	400	512255	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C81	.01	400	512255	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C82	.25	200	512045	P488-25		GT2P25		2TM-P25	Fixed Trimmer
C83	8		513443						Fixed Trimmer *.

* Not used in all models.
† Models including letter "A" in series designating use 10MFD in this application (Part No. 505174).
¶ Some models combine C68 and CC69. Models including letter "B" in series designation use 390 MMF and models not having letter "B" use 470MMF
● Items C54A, and C54B, C54C, R57A, R57B, and R57C are combined in one unit.
‡ Replaces Vert. Integrator Net. Install DD-103 in series with PC-100 input lead.
¶ Replaces Vert. Integrator Net. Install 5HK-S1 in series with 101C1 input lead.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	2	509314		RTV-309		Contrast Control - Panel Wire Wound
B	1Meg						Volume Control & Switch - Rear
R2A	2.5Meg	1/2	508893		RTV-313		Height Control - Panel
B	1Meg						Vertical Hold Control - Rear
R3A	5000Ω		508891	Q11-114	AM-19-8	AN-10	Vertical Linearity Control
B	Shaft		Not Req.	RS-2	AK-4	AN-31	Attach to R3A per instructions
R4A	50KΩ	1/2	508889	Q11-123	AG-44-8	AN-31	Brightness Control
B	Shaft			Not Req.	RS-2	AK-4	Attach to R4A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ±10% UNLESS OTHERWISE SPECIFIED
R5	3900Ω	1/2	510147	BTS-3900	Antenna Coil Shunt
R6	47K	1/2	510167	BTS-47K	RF Amplifier Grid
R7	2200Ω 20%	1/2	510143	BTS-2200	RF Amplifier Decoupling
R8	10KΩ 20%	1/2	510155	BTS-10K	RF Coil Shunt
R9	4700Ω 20%	1/2	510149	BTS-4700	Mixer Grid
R10	220KΩ 20%	1/2	510179	BTS-220K	Mixer Grid
R11	15KΩ 20%	1/2	510158	BTS-15K	Mixer Plate
R12	10KΩ	1/2	510155	BTS-10K	Oscillator Grid
R13	4700Ω	1/2	510149	BTS-4700	Oscillator Plate
R14	8200Ω 5%	1/2	510756	BTS-8200 5%	1st Video IF Grid See Note 1
R15	47Ω	1/2	510112		1st Video IF Cathode See Note 2
R16	390Ω	1/2	510129	BTS-390	AGC Network
R17	8200Ω 5%	1/2	510756	BTS-8200 5%	2nd Video IF Grid See Note 3
R18	82Ω	1/2	510117	BTS-82	2nd Video IF Cathode See Note 4
R19	100Ω 20%	1/2	510119	BTS-100	Decoupling
R20	100Ω 20%	1/2	510119	BTS-100	Decoupling
R21	12KΩ 5%	1/2	510723	BTS-12K 5%	3rd Video IF Grid See Note 3
R22	100Ω	1/2	510118	BTS-100	3rd Video IF Cathode
R23	47KΩ	1/2	510166	BTS-47K	AGC Diode Load See Note 5
R24	560KΩ	1/2	510186	BTS-560K	AGC Network
R25	1Meg 5%	1/2		BTS-1Meg 5%	Video Output Grid
R26	18KΩ 5%	1/2	510745	BTS-18K 5%	Peaking Coil Shunt
R27	4000Ω	5	510753	1 3/4A-4000	Video Output Plate Wire Wound
R28	10KΩ	1/2	510155	BTS-10K	Isolation
R29	470KΩ	1/2	510184	BTS-470K	Video Peaking
R30	470KΩ	1/2	510184	BTS-470K	Picture Tube Cathode
R31	22KΩ	1/2	510160	BTS-22K	Picture Tube Grid
R32	47KΩ	1/2	510166	BTS-47K	Voltage Divider See Note 6
R33	15KΩ	1/2	510357	BTS-15K	Voltage Divider See Note 7
R34	18KΩ 5%	1/2	510159	BTS-18K 5%	Sound IF Coil Shunt
R35	470KΩ	1/2	510184	BTS-470K	Sound IF Grid
R36	82Ω	1/2	510117	BTS-82	Sound IF Cathode
R37	4700Ω 20%	1	510249	BTA-4700	Sound IF Decoupling
R38	680Ω	1/2	510134	BTS-680	Decoupling
R39	220Ω	1/2	510124	BTS-220	Balancing
R40	220Ω	1/2	510124	BTS-220	Balancing
R41	22KΩ	1/2	510160	BTS-22K	Ratio Detector Diode Load
R42	18KΩ 5%	1/2	510159	BTS-18K 5%	De-emphasis
R43	68KΩ 20%	1/2	510170	BTS-68K	Tone Compensation
R44	10Meg 20%	1/2	510197	BTS-10Meg	Audio Amplifier Grid
R45	470KΩ	1/2	510184	BTS-470K	Audio Amplifier Plate
R46	680KΩ 5%	1/2	510746	BTS-680K 5%	Audio Output Grid
R47	820KΩ 5%	1/2	510747	BTS-820K 5%	Bias Network
R48	270KΩ	1/2	510180	BTS-270K	Isolation
R49	2.2Meg 20%	1/2	510193	BTS-2.2Meg	Sync. Amplifier Grid
R50	68KΩ	1/2	510169	BTS-68K	Sync. Amplifier Plate
R51	270KΩ	1/2	510180	BTS-270K	Sync. Clipper Cathode
R52	680KΩ	1/2	510187	BTS-680K	Sync. Clipper Plate
R53	3900Ω 5%	1/2	510748	BTS-3900 5%	Sync. Seperator Cathode
R54	6800Ω	1/2	510151	BTS-6800	Sync. Seperator Plate
R55	4700Ω 5%	1/2	510750	BTS-4700 5%	Sync. Seperator Plate
R56	27KΩ	1/2	510162	BTS-27K	Integrator Network
R57A	22KΩ			BTS-22K	Integrator Network
B	8200Ω		508062 ●	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R58	1.8Meg 5%	1/2	510743	BTS-1.8Meg 5%	Vertical Oscillator Grid See Note 8
R59	4.7Meg	1/2	510759	BTS-4.7Meg	Bias Network
R60	100KΩ 5%	1/2	510172	BTS-100K 5%	Bias Network
R61	1.5Meg	1/2	510752	BTS-1.5Meg	Vertical Oscillator Plate
R62	6800Ω	1/2	510151	BTS-6800	Vertical Peaking
R63	2.2Meg 20%	1/2	510193	BTS-2.2Meg	Vertical Output Grid
R64	680Ω	1/2	510134	BTS-680	Vertical Output Cathode
R65	2700Ω	2	510344	BTD-2700	Decoupling
R66	560Ω	1/2	510132	BTS-560	Vertical Sweep Damping
R67	560Ω	1/2	510132	BTS-560	Vertical Sweep Damping
R68	2200Ω	1/2	510142	BTS-2200	Integration
R69	100KΩ 5%	1/2	510751	BTS-100K 5%	Phase Detector Diode Load
R70	100KΩ 5%	1/2	510751	BTS-100K 5%	Phase Detector Diode Load
R71	4.7Meg	1/2	510759	BTS-4.7Meg	Phase Detector Diode Load
R72	470KΩ	1/2	510184	BTS-470K	AFC Filter
R73	1500Ω	1/2	510139	BTS-1500	Horizontal MV Cathode
R74	3900Ω	1/2	510147	BTS-3900	Horizontal MV Plate See Note 9
R75	100KΩ 5%	1/2	510751	BTS-100K 5%	Horizontal MV Grid
R76	270KΩ	1/2	510180	BTS-270K	Horizontal MV Plate See Note 7
R77	330KΩ 20%	1/2	510181	BTS-330K	Horizontal MV Plate See Note 10
R78	15KΩ	2	510357	BTB-15K	Horizontal MV Decoupling
R79	68Ω	1/2	510116		Parasitic Suppressor
R80	470KΩ	1/2	510184	BTS-470K	Horizontal Output Grid
R81	100Ω	1	510218	BTA-100	Horizontal Output Cathode
R82	12KΩ	5	510758	1 3/4A-12K	Horizontal Output Screen Wire Wound
R83	4700Ω	1	510248	BTB-4700	AFC Feedback
R84	27KΩ	1/2	510162	BTS-27K	AFC Diode Load
R85	1Meg	2	510390		H.V. Filter
R86	1000Ω	1/2	510137	BTS-1000	Horizontal Sweep Damping
R87	600Ω	10	510741	1 3/4A-600	Filter Wire Wound
R88	220KΩ	1/2	510179	BTS-220K	Line Isolation
R89	100Ω	1/2	510119	BTS-100	Decoupling

Note 1. Some Models may use a 12KΩ resistor in this application
Note 2. Some Models may use a 68Ω resistor in this application
Note 3. Some Models may use a 10KΩ resistor in this application
Note 4. Some Models may use a 47Ω resistor in this application
Note 5. Some Models may use a 8200Ω resistor in this application
Note 6. Some Models may use a 15KΩ resistor in this application
Note 7. Not used in all models
● Items C54A, C54B, C54C, R57A, R57B and R57C are combined in one unit
Note 8. Some Models may use 2 Meg Resistor in this application
Note 9. Some Models may use 3300Ω Resistor in this application
Note 10. Some Models may use 680KΩ Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @1.6A	640VCT .210ADC	5VAC 3A	6.3VAC 7.4A SEC. 4 6.3VAC @1.2A	509380			TP-370

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	153Ω	940Ω	508076	A-8111②	A-3000 ②	TBO-1②	Vert. Blocking Osc. Trans
T3	295Ω Tapped @36Ω	3.7Ω Tapped @.4Ω & 3Ω	509384		HVO-6		Horiz. Output Trans.
T4	800Ω Tapped @9Ω	16Ω	509375	A-8123 ②	A-3037	TSO-5	Vert. Output Trans.
T5A	48Ω		509704	DY-8	MDF-70		Horiz. Deflection Coils
B							Vert. Deflection Coils

② Drill One New Mounting Hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	4.3KΩ	3Ω	450Ω	.9Ω	509376	A-3877②	A-2930	RO-8②	② Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	P.M.	3.0Ω	509398	ST-108 Mod. P6-X	6A15	
	CONE DIA.	V. C. DIA.				
	5 7/8 in.	9/16 in.				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 mA	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
L1	.210A	73Ω	2.9 Henries	508341	C-2325	C-2991②	TR-3300②	② Drill One New Mounting Hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Stewart Warner PART No.	MERIT PART No.	
L2	Ant. Coil	0Ω	0Ω	507952		Channel #2 Refer to Misc. for other Channels
L3	Fil. Choke	0Ω		507970		
L4	RF MixerGrid and Osc. Coils	0Ω		507972		Channel #2 Refer to Misc. for other Channels
L5	Fil. Choke	0Ω		507971		
L6	1st Video IF	.9Ω		509061		Slug Part No. 509062
L7	Fil. Choke	0Ω		507584		
L8	2nd Video IF	.2Ω		507343		Less Slug Part No. 507357
L9	Fil. Choke	0Ω		507584		
L10	RF Choke	2.4Ω		507367		
L11	3rd Video IF	.2Ω		507343		Less Slug Part No. 507357
L12	Fil. Choke	0Ω		507584		
L13	4.5MC Trap	1.8Ω		509603		Slug Part No. 507357
L14	Peaking Coil	11.2Ω		509341		
L15	Peaking Coil	15Ω		509342		
L16	Sound IF	1Ω		509378		
L17	Ratio Det. Trans.	6Ω	.2Ω	509706		Tap at .8Ω
L18	Fil. Choke	0Ω		507584		
L19	Horiz. Osc.	80Ω		508967		Includes Slug Part No. 508963
L20	Width Coil	1.4Ω		509361	MWC-2	Includes Slug Part No. 507429

FUSES

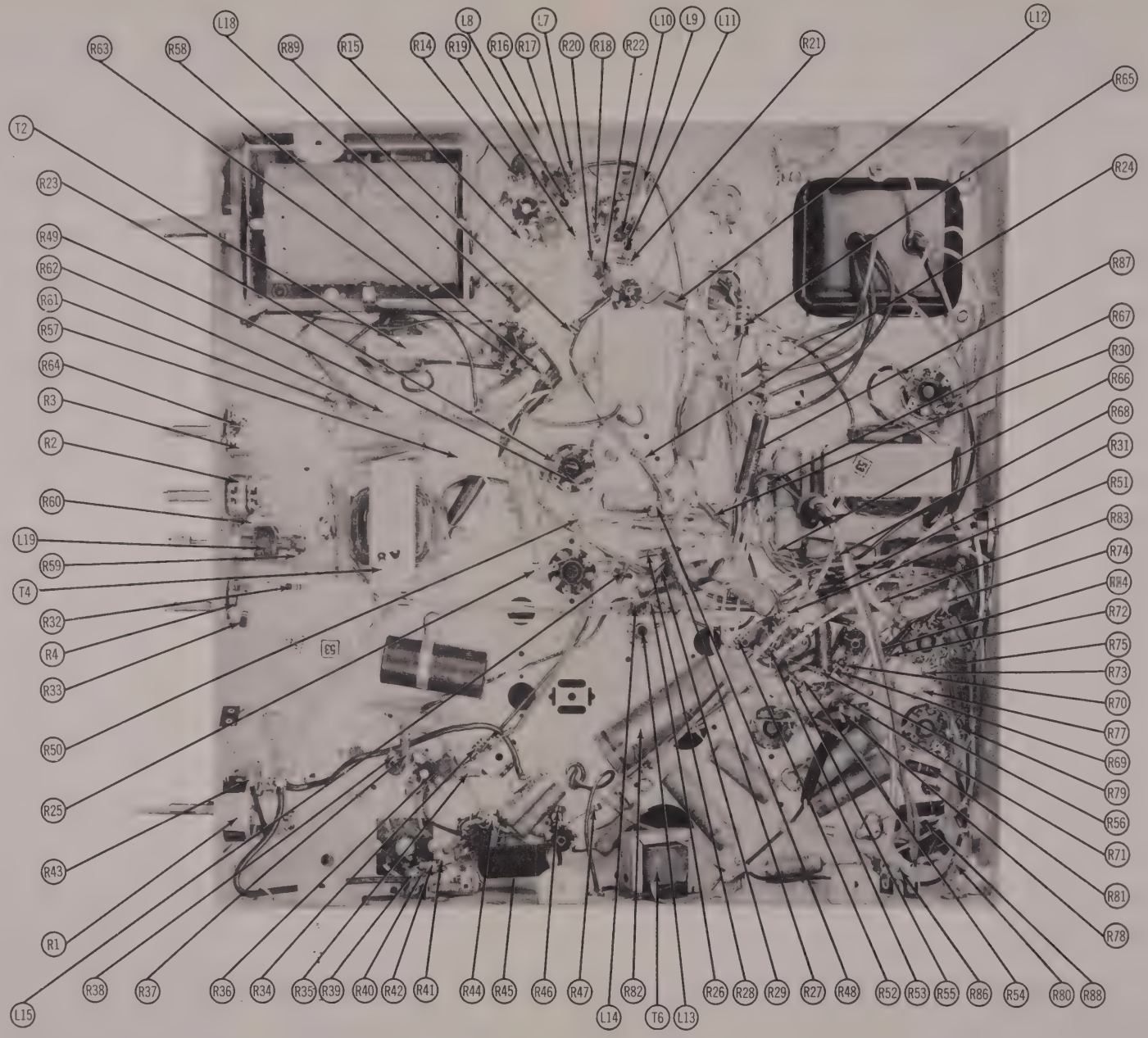
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STEWART WARNER PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1 Amp.	509517		318001		
M2	3AG	1/4 Amp	508063		318.250		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Stewart Warner PART No.		
M3	Bayonet	6-8	150MA	Brown	118921	118921	Type No. 47

MISCELLANEOUS

ITEM No.	PART NAME	Stewart Warner PART No.	NOTES
M4	RF Tuner	508890	Complete with tubes.
	4th Video IF	509613	Less Slug
	RF Choke	507367	
	Capacitor	513016	82MMF
M5	Capacitor	513432	5MMF — Video Det. Assy.
	Crystal	509386	1N64
	Peaking	509340	
	Peaking	509342	
	Resistor	510153	8.2KΩ
M6	Focus Magnet	509644	
M7	Ion Trap	509688	
	Ant. Coils	507953	Channel #3
	Ant. Coils	507954	Channel #4
	Ant. Coils	507955	Channel #5
	Ant. Coils	507956	Channel #6
	Ant. Coils	507957	Channel #7
	Ant. Coils	507958	Channel #8
	Ant. Coils	507959	Channel #9
	Ant. Coils	507960	Channel #10
	Ant. Coils	507961	Channel #11
	Ant. Coils	507962	Channel #12
	Ant. Coils	507963	Channel #13
	RF Mixer Grid and Osc. Coil	507973	Channel #3
	RF Mixer Grid and Osc. Coil	507974	Channel #4
	RF Mixer Grid and Osc. Coil	507975	Channel #5
	RF Mixer Grid and Osc. Coil	507976	Channel #6
	RF Mixer Grid and Osc. Coil	507977	Channel #7
	RF Mixer Grid and Osc. Coil	507978	Channel #8
	RF Mixer Grid and Osc. Coil	507979	Channel #9
	RF Mixer Grid and Osc. Coil	507980	Channel #10
	RF Mixer Grid and Osc. Coil	507981	Channel #11
	RF Mixer Grid and Osc. Coil	507982	Channel #12
	RF Mixer Grid and Osc. Coil	507983	Channel #13
	Knob	509016	Channel Selector
	Knob	509017	Fine Tuning
	Knob	509019	Contrast
	Knob	509018	Off/On- Volume
B1	Trimmer	508071	Horiz. Drive 10-160MMF



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

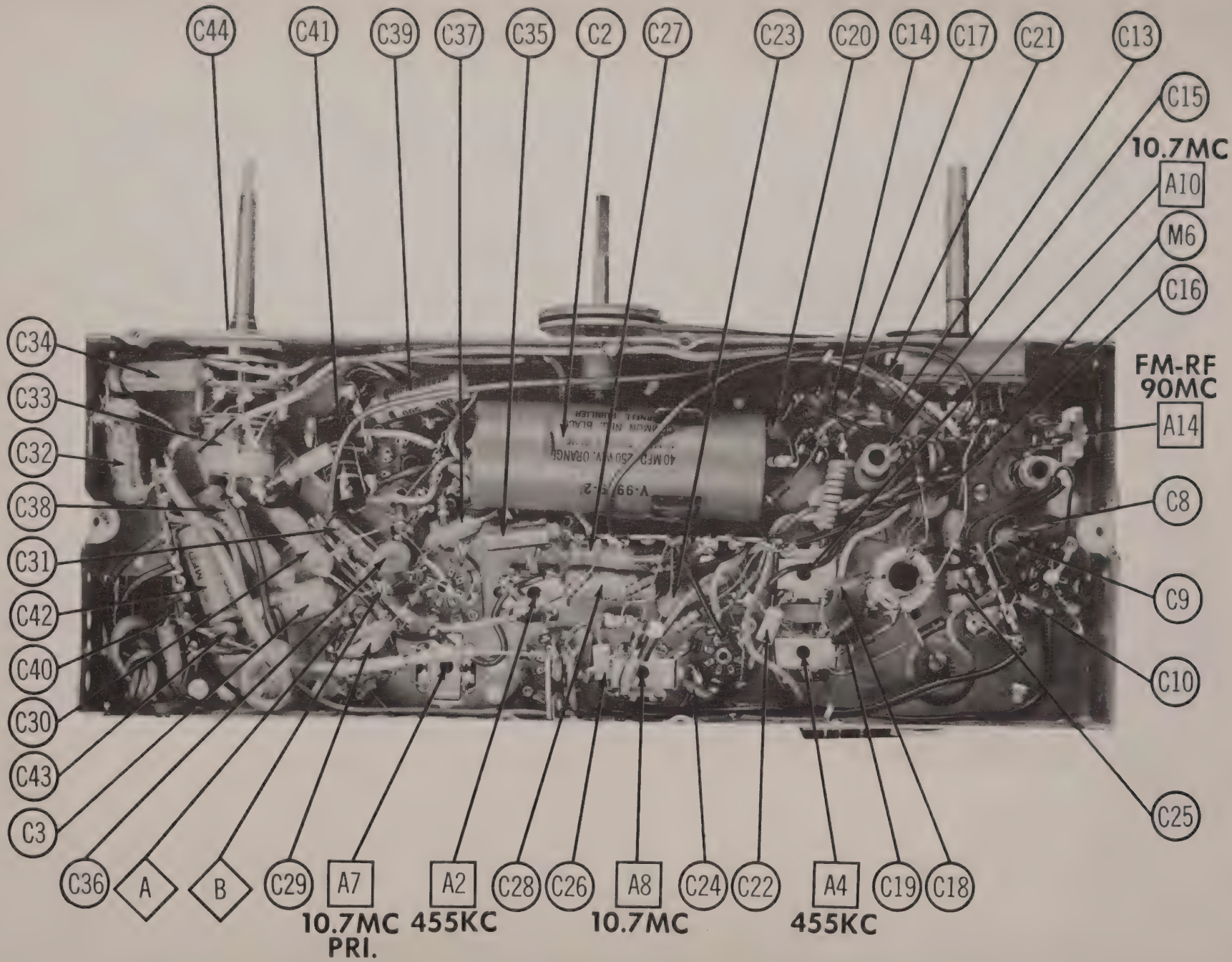
WESTINGHOUSE
MODEL H-354C7 (Ch. V-2180-2)

WESTINGHOUSE
MODEL H-354C7 (Ch. V-2180-2)

TRADE NAME	Westinghouse Model H354C7 (Ch.V-2180-2)
MANUFACTURER	Westinghouse Electric Corp., Television-Radio Div., Sunbury, Pa.
TYPE SET	AC Operated AM-FM Phono Combination Superheterodyne Receiver.
TUBES (SEVEN)	Types 6BJ6 FM RF Amp., 12AT7 FM-AM Conv., 12BA6 IF Amp., 12BA6 FM 2nd IF Amp., 12AL5 Ratio Det., 12AV6 AM Det. -AVC-AF Amp., 50L6GT Audio Output.
POWER SUPPLY	105-120 Volts AC — RATING .5 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 540-1615KC	FREQ. MOD. 88-108MC

DIAL CORD DRIVE

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America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C41
C39
C37
C35
C2
C27
C23
C20
C14
C17
C21
C13
C15
10.7MC
A10
M6
C16
FM-RF
90MC
A14
C8
C9
C10
C25
C34
C33
C32
C38
C31
C42
C40
C30
C43
C3
C36
A
B
C29
A7
10.7MC
PRI.
A2
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C28
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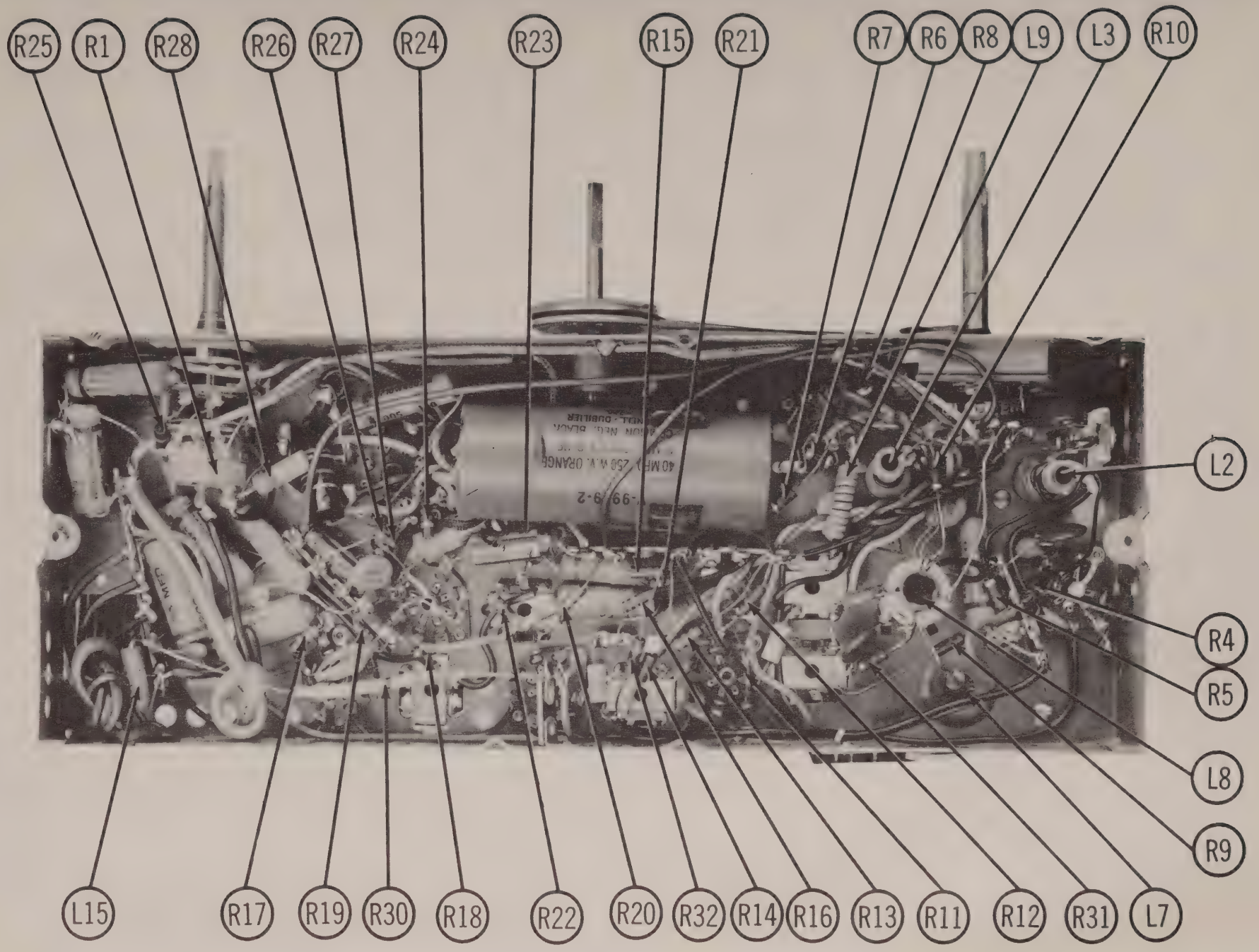
A8
10.7MC
C24
C22
A4
455KC
C19
C18


R25
R1
R28
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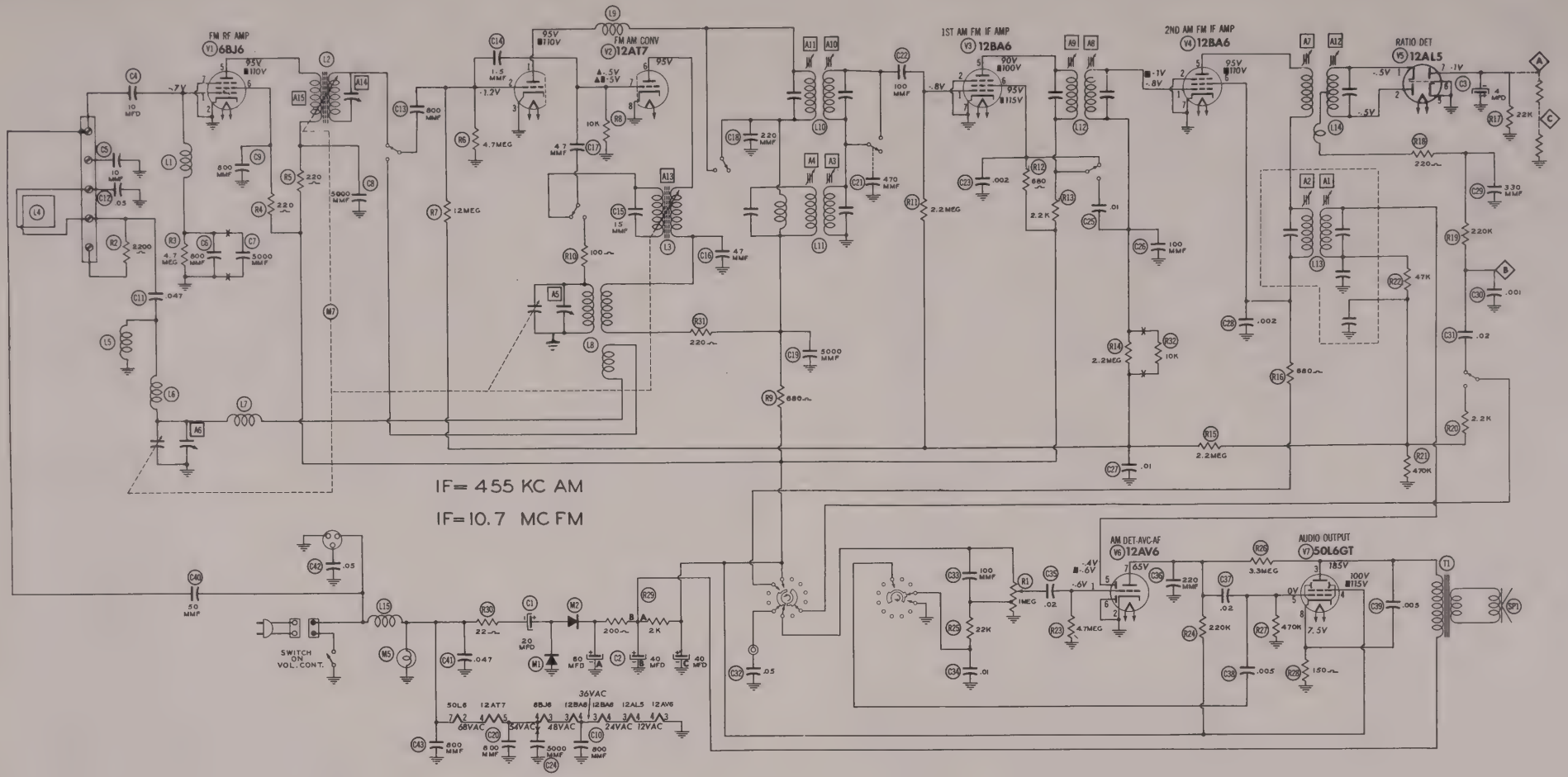
R31
L7



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†820Ω	210KΩ	220Ω	0Ω	0Ω	†820Ω	470KΩ	0Ω	.1Ω
V 2	6BE6	22KΩ	1.9Ω	0Ω	.1Ω	†820Ω	†6.4Ω	1.3Meg		
V 3	6BA6	110KΩ ●1.3 Meg	0Ω	0Ω	.1Ω	†1.8Ω	†7.6KΩ	68Ω		
V 4	6BA6	.8Ω	0Ω	0Ω	.1Ω	†1.8KΩ	†1.8KΩ	68Ω		
V 5	6AL5	INF	INF	0Ω	1.8Ω	6.8KΩ	∞	6.8KΩ		
V 6	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	315KΩ	†550KΩ		
V 7	6V6GT	INF	.1Ω	†430Ω	∞	470KΩ	INF	0Ω	270Ω	
V 8	6X5GT	INF	0Ω	123Ω	INF	110Ω	INF	.1Ω	110KΩ	

TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
● MEASURED IN "AM" POSITION
† MEASURED FROM PIN 8 OF V8.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	FM RF Amplifier	6BJ6	6BJ6	7CM	
V2	FM-AM Converter	12AT7	12AT7	9A	
V3	1st FM-AM IF Amp.	12BA6	12BA6	7BK	
V4	2nd FM AM IF Amp.	12BA6	12BA6	7BK	
V5	Ratio Detector	12AL5	12AL5	6BT	
V6	AM Det. AVC-AF Amp.	12AV6	12AV6	7BT	
V7	Power Output	50L6GT	50L6GT	7AC	

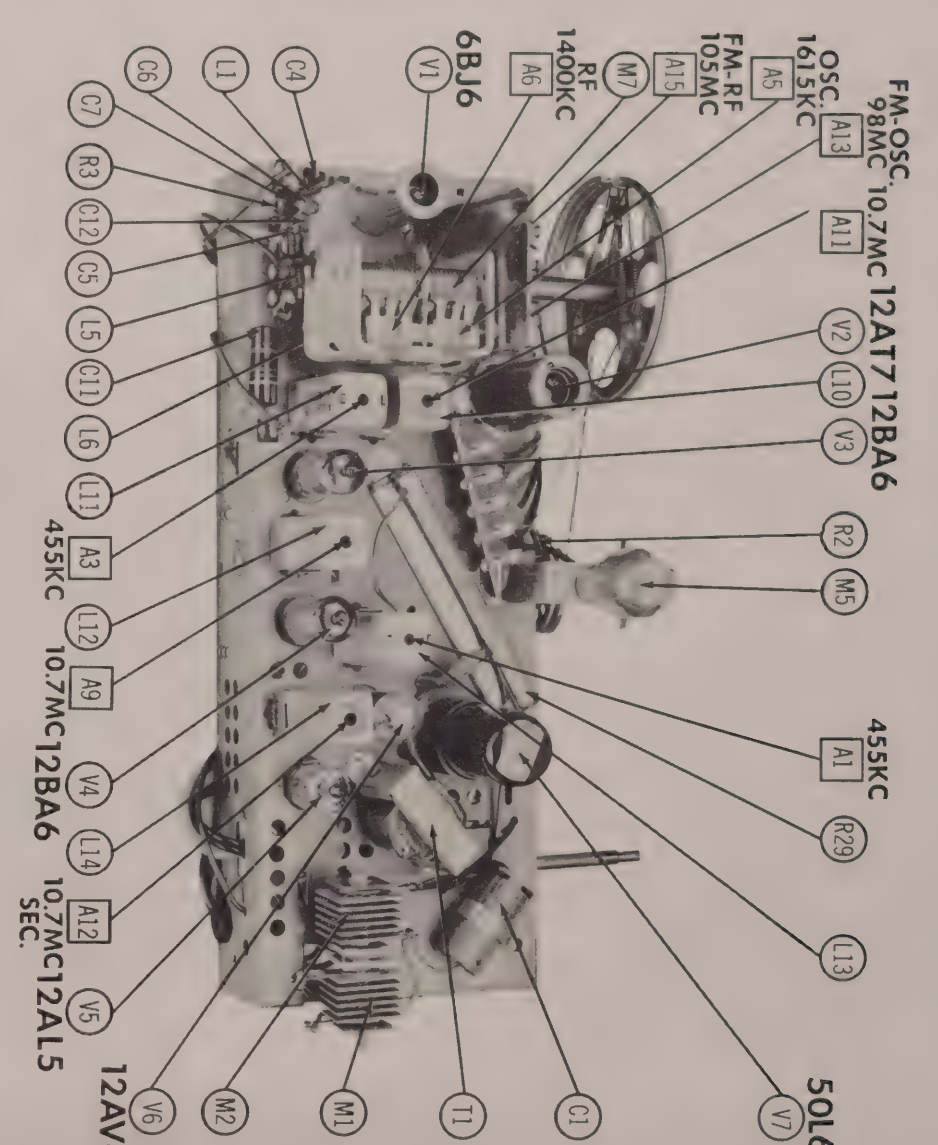
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	20	200	V-9823-2	PRS450/20		BR2025		TVA-1508	Voltage Doubler
C2A	60	250	V-9919-2	AFH3-29					Filter (Red)
B	40	250							Filter (Orange)
C	40	250							Filter (Blue)
C3	4	50	V-4637	PRSI50/4		BR550		TVA-1303	Stabilizing
C4	10		V-5658-7	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	FM RF Coupling
C5	10		V-5658-7	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	FM Ant. Isolation
C6	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	FM RF Amp. Grid
C7	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM RF Amp. Grid *
C8	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM RF Amp. Plate
C9	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	6HK-D1	FM RF Amp. Screen
C10	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	FM RF Amp. Fil. *
C11	.047	400	V-10157-4473M	P488-047	DF-503	PTE4S5		4TM-S47	AM RF Coupling *
C12	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	AM Ant. Isolation
R13	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Coupling
C14	1.5		V-5658-9	SI1.5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C15	15			SI15NP0	TCZ-15		NP0K-150		Fixed Trimmer
C16	47		V-10710-1				N220K-470		Fixed Trimmer
C17	47		V-10710-1				N220K-470		Osc. Grid Cap
C18	220		V-10710-2	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Mixer Plate Dec.
C19	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer Plate Dec.
C20	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	Conv. Fil.
C21	470		R5CC21ZY471M	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Switch Isolation
C22	100		R4CC21YY101M	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C23	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	1st. IF Amp. Screen
C24	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Fil.
C25	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AM IF Coupling
C26	100		R4CC21YY101M	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	2nd IF Amp. Grid
C27	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter
C28	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	2nd IF Amp. Dec.
C29	330	500	RCM20A331M	1468-00035	D6-331		GP2K-331	1FM-335	RF Bypass
C30	.001	600	RCP10W6102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C31	.02	400	RCP10W2203M	P488-02	DF-203	PTE4S1		4TM-S2	Audio Coupling
C32	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	Phono Isolation
C33	100		R4CC21YY101M	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Tone Comp.
C34	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C35	.02	400	RCP10W2203M	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C36	220		V-10710-2	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate
C37	.02	400	RCP10W2203M	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C38	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C39	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Power Output Plate
C40	50		V-5658-10	SI50	D6-500		GP1K-500	5GA-Q5	FM Line Ant. Isolation
C41	.047	400	V-10157-4473M	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C42	.05	200	RCP10W2503M	P288-05	DF-503	PTE4S5		2TM-S5	Phono Isolation
C43	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C44	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	Switch Isolation *

* Not Used In All Models

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Switch		V-10359-2				Radio-Phono Tone Sw.
B	1Meg	½					Volume Control& On-Off Sw.(Tapped@250KΩ)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	
R2	2200Ω	½	RC20AE222K	BTS-2200	Antenna Loading
R3	4.7Meg	½	RC20AE475M	BTS-4.7Meg	FM RF Amplifier Grid
R4	220Ω	½	RC20AE221M	BTS-220	FM RF Amplifier Screen
R5	220Ω	½	RC20AE221M	BTS-220	FM RF Amplifier Plate Decoupling
R6	4.7Meg	½	RC20AE475M	BTS-4.7Meg	Mixer Grid
R7	12Meg	½	RC20AE156M	BTS-12Meg	AVC Network
R8	10KΩ	½	RC20AE103M	BTS-10K	Oscillator Grid
R9	680Ω	½	RC20AE681M	BTS-680	Decoupling
R10	100Ω	½	RC20AE101M		Parasitic Suppressor
R11	2.2Meg	½	RC20AE225M	BTS-2.2Meg	1st. IF Amp. Grid
R12	680Ω	½	RC20AE681M	BTS-680	1st. IF Decoupling
R13	2200 Ω	½	RC20AE 222M	BTS-2200	1st. IF Decoupling
R14	2.2Meg	½	RC20AE225M	BTS- 2.2Meg	2nd. IF Amp. Grid
R15	2.2Meg	½	RC20AE225M	BTS-2.2Meg	AVC Network
R16	680Ω	½	RC20AE681M	BTS-680	2nd. IF Amp. Decoupling
R17	22KΩ	½	RC20AE223M	BTS-22K	Ratio Detector Diode Load
R18	220Ω	½	RC20AE221M	BTS-220	Balancing
R19	22KΩ	½	RC20AE223M	BTS-22K	De-emphasis
R20	2200Ω	½	RC20AE222K	BTS-2200	Tone Compensator
R21	470KΩ	½	RC20AE474M	BTS-470K	AM Detector Diode Load
R22	47KΩ	½	RC20AE473M	BTS-47K	AM Detector Diode RF Filter
R23	4.7Meg	½	RC20AE475M	BTS-4.7Meg	AF Amplifier Grid
R24	220KΩ	½	RC20AE224M	BTS-220K	AF Amplifier Plate
R25	22KΩ	½	RC20AE223M	BTS-22K	Tone Compensator
R26	3.3Meg	½	RC20AE335M	BTS- 3.3Meg	Feedback
R27	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R28	150Ω	1	RC30AE151K	BTA-150	Output Cathode
R29A	2000Ω	6	V-10054-1		Filter
B	200Ω	3			Filter
R30	22Ω	3	V-6067-7		Surge Limiter
R31	220Ω	½	RC20AE221M		Osc. Plate Decoupling
R32	10K	½	RC20AE103M	BTS-10K	2nd IF Amp. Grid

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.5KΩ	3.4Ω	230Ω	.6Ω	V-9827	A-3876	A-3025 ①	RO-2	① Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.4Ω	V-10675-1	ST-115 Mod.P8-V	8A21	
	CONE DIA.	V. C. DIA.				
SP2	7 3/8"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Westinghouse PART No.	MERIT PART No.	IRC PART No.	
L1	FM Ant. Coil	0Ω		V-10664-1			
L2	FM RF Coil	0Ω	0Ω	V-10642-1			
L3	FM Osc. Coil	0Ω	0Ω	V-10643-1			
L4	AM Loop Ant.	.3Ω					
L5	RF Choke	8.5Ω					
L6	AM Ant. Coil	1.8Ω					
L7	RF Choke	2.2Ω		V-9099-5		CLA	2.7 Microhenries
L8	AM Osc. Coil	4Ω	9Ω	V-10641-1			Tertiary Winding 2.2Ω
L9	Parasitic Supp.	0Ω		V-4886-13			
L10	1st. FM IF	.1Ω	.1Ω	V-9688			
L11	1st. AM IF	4.4Ω	11Ω	V-10619			
L12	2nd. FM IF	1.6Ω	1.6Ω	V-9642			
L13	2nd. AM IF	15.5Ω	15.5Ω	V-10350-1			
L14	Ratio Det. Trans.	2.6Ω	.4Ω	V-9828			Tap at .5Ω
L15	Line Choke	.85Ω		V-9099-1		CLA	1.2 Microhenries

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	Westinghouse PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.095A	V-9640	NC-5	5M1	
M2	.075A	V-9640	NC-5	5M1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								REMARKS
	Westinghouse PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M3		AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	WALCO PART No.	JENSEN PART No.	
M4		W-30AGA	JP-312	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Westinghouse PART No.		
M5	Bayonet	110	7W	Clear	6S6D6		

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M6	Switch	V-10651-1	Function Selector
M7	Tuning Cap	V-10662-1	
A14	Trimmer	V-10640-1	FM RF Adj.
	Cabinet	V-1245-1	
	Dial	V-10308-1	
	Pointer	V-10310-1	
	Knob	V-9104-9	Tuning (Rear)
	Knob	V-9861-2	Tone Switch (Rear)
	Knob	V-10408-1	Band Switch
	Knob	V-10408-2	Vol. -On/Off

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use an isolation transformer to protect the test equipment.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400% Mod.)	AM (CW)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1615KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point (A) to chassis. The junction of these two resistors is alignment Point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to Pin 1, (Grid) of 12BA6, (V3). Low side to chassis.	10.7MC (Unmod.)	FM (CCW)	Tuning gang fully open.	DC probe to Point (A). Common to chassis.	A7, A8 A9	Adjust for maximum deflection.
5.	"	High side to Pin 2 (Grid) of 12AT7, (V2). Low side to chassis.	"	"	"		A10, A11	"
6.	"	"	"	"	"	DC probe to Point (B). Common to Point (C).	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	.001MFD	High side to Pin 1, (Grid) of 12BA6, (V3) Low side to chassis.	10.7MC (450KC swp)	FM (CCW)	Point of ma non-inter ference.	Vert. amp. to Point (A). Low side to chassis.	A7, A8, A9	Disconnect stabilizer capacitor C3. Adjust for max. amplitude and symmetry as per Fig. 1.
5.	"	High side to Pin 2, (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A12	Reconnect capacitor C3. Adjust A12 so 10.7MC occurs at center of crossover lines as per Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistor	High side thru 300Ω to FM ant. terminal. Low side to chassis.	98MC (unmod.)	FM	98MC	DC probe to Point (A). Common to chassis.	A13, A14	Adjust for max. deflection.
8.	"	"	105MC	"	105MC	"	A15	Adjust for max. deflection.
9.	"	"	90MC	"	90MC	"	A14	Retouch A14 for max. deflection. Repeat steps 8 & 9 until no further improvement can be made.

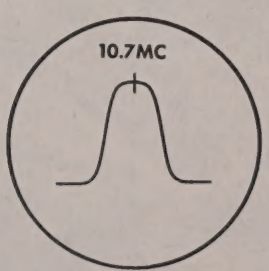


FIG. 1

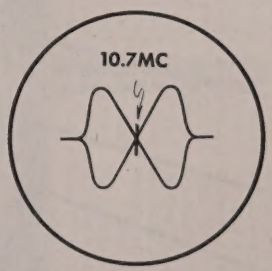


FIG. 2